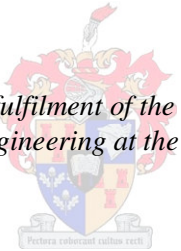
ASSESSING MANAGEMENT PROCESSES OF LABOUR BASED CONSTRUCTION WORKS

By

Cleaverson K. C. Nyando



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Declaration

I hereby declare and certify that I am responsible for the work submitted in this thesis, that the original work is my own except as specified in acknowledgments. It is being submitted for the Degree of Masters of Science in Civil Engineering in the University of Stellenbosch. I have not previously in its entirety or in part submitted it to this or any other institution for a higher degree.

Author Signature …….

Abstract

Labour based technology has extensively been utilized in delivery of poverty alleviation programmes. Most of the projects implemented have been of construction in nature. In many cases, labour based works have been characterized with poor performance of not having projects completed within budget, in time and of good quality. Furthermore labour based works projects have been ad hoc in nature, lack spatial focus with no link to national development and sparingly involves engineering skills in its make shift administrative arrangements. Research has shown that most construction problems have been management process related and not product related.

This research was initiated as a response to these challenges and represents an attempt to deliver sustainable improved performance of labour based works projects. The research identifies seven phases with various deliverables through the assessment and analysis of management processes of labour based works using the Process Protocol. The Process Protocol based phases consider the whole life cycle of a construction project whilst integrating the process elements under a common framework. To achieve a successful project and process execution, the findings indicate three operational levels of the participants of the activity zone. Several risk factors which need to receive special attention during planning and implementation of labour based works projects have been identified. The practical experiences in responding to, monitoring and controlling of the risk factors are also provided.

The analysis of the key sequential phases and documentation of management of labour based works was based on a literature review of conference papers, reports, available project documents and limited interviews with officials involved in public works programmes. Best practices in management of labour based works have been used to follow and synthesise the Process Protocol approach to the management processes of labour based works.

Opsomming

Arbeid-baseerde tegnologie word algemeen gebruik in programme wat ontwerp is om armoede te verlig. Die meeste van die programme wat geïmplementeer is, het te make met konstruksie. In baie gevalle is hierdie arbeid-baseerde projekte gekenmerk deur swak prestasie en die projekte is nie betyds voltooi nie, daar is nie gehou by die begroting nie, of die gehalte van die werk was swak. Verder is hierdie projekte ad hoc van aard, is daar ’n gebrek aan ruimtelike fokus, is dit nie gekoppel aan nasionale ontwikkeling nie en word daar te min gebruik gemaak van ingenieursvernuf en is die administrasie gebrekkig. Navorsing het bewys dat die meeste konstruksie probleme te wyte is aan bestuurs-prosesses en dat dit nie produk-verwant is nie.

Hierdie navorsing is gedoen as gevolg van hierdie probleme en is ’n poging om volhoubare verbeterde prestasie te lewer in arbeid-baseerde projekte. Tydens die navorsing is sewe fases geïdentifiseer d.m.v. die ontleding van bestuursprosesse. Die Proses Protokol is gebruik. Hierdie Proses Protokol gebaseerde fases behels die hele lewens-siklus van ’n konstruksie projek en integreer al die proses komponente in ’n enkel raamwerk. Die bevindinge toon dat daar drie operasionele vlakke van deelnemers in die aktiwiteit sone nodig is om die sukses van ’n projek te verseker. Daar is verskillenmde risiko faktore wat tydens die beplanning en implementering van projekte spesiale aandag moet geniet . Praktiese wenke betreffende die monitor van, reageer op en beheer van risiko faktore word ook verskaf.

Die ontleding van sleutel fases en die dokumentasie van die bestuur van arbeid gebaseerde projekte is gebaseer op ’n literatuur oorsig van konferensie verslae, beskikbare projek dokumente en beperkte onderhoude met amptenare wat betrokke was in openbare programme. Daar is gebruik gemaak van beste praktyke in bestuur van arbeid gebaseerde projekte in die sintese van bestuurprosesse vir arbeid gebaseerde projekte.

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Table of Contents

Declaration i
Abstract ii
Opsomming iii
Acknowledgements iv
Table of Contents v
List of Figures xii
List of Tables xiii
List of Abbreviations xv
1 CHAPTER 1: INTRODUCTION 1
1.1 Introduction 1
1.2 Rationale for the Study 3
1.3 The Problem Statement 4
1.4 Objectives of the Research 4
1.5 The Research Methodology 5
1.6 Limitations and Delimitations of the Research 5
1.7 The Thesis Outline 6
1.8 Summary 7
2 CHAPTER 2: REVIEW OF RELATED WORK 8
2.1 Introduction 8
2.2 Definitions of concepts 8
2.3 Labour Based Works 12
2.3.1 Background 12
2.3.2 Employment Creation and Poverty 14
2.4 The Management Process of Labour Based Works 27
2.4.1 Types of civil works 27
2.4.2 Existing Management Process Approaches 29
2.4.2.1 Gaude (1987) Process Approach 29
2.4.2.2 IBRD Process Approach 29
2.4.2.3 McCutcheon Process Approach 30
2.4.3 Current Challenges of Labour Based Works 32

2.4.4 Process Approach Reviews 34
2.5 Framework Approach to Managing Labour Based Works 35
2.6 The Process Protocol 38
2.6.1 The Process Protocol Principles 38
2.6.2 The Process Protocol Elements 39
2.6.2.1 The Activity Zones 40
2.6.2.2 The Phases 44
2.6.2.3 Legacy Archive 56
2.6.2.4 Phase Review 56
2.6.2.5 Deliverables 57
2.6.3 The Process Protocol Advantages 64
2.7 Risk and Risk Management in Labour Based Works Projects 65
2.7.1 Introduction 65
2.7.2 Project risk management 65
2.7.2.1 Define objectives / planning 67
2.7.2.2 Risk identification 67
2.7.2.3 Risk analysis (quantification) 67
2.7.2.4 Risk response 68
2.7.2.5 Risk monitoring and control 69
2.7.3 Benefits of risk management 69
2.8 Summary 69
3 CHAPTER 3: RESEARCH METHODOLOGY 70
3.1 Introduction 70
3.2 Research Methodology 70
3.3 Research Design 70
3.4 Sampling 71
3.5 Data Collection Methods 71
3.5.1 Review of Literature 71
3.5.2 Interview 72
3.6 Data Analysis 72
3.7 Summary 73

4 CHAPTER 4 IDENTIFICATION OF MANAGEMENT PROCESSES OF LABOUR BASED WORKS 74
4.1 Introduction 74
4.2 The Activity Zones 74
4.2.1 Introduction 74
4.2.2 National Level 74
4.2.3 Integrated Local Level 77
4.2.4 Project Level 81
4.2.5 Summary 86
4.3 The Phases and Deliverables 88
4.3.1 Phase Zero - Demonstrating the Need 90
4.3.1.1 Introduction 90
4.3.1.2 Establishing Need for a Project 90
4.3.1.2.1 Project need establishment at National level 90
(a) Undertake poverty situation analysis 90
(b) Develop a development strategy 92
(c) Create enabling policy and legislative environment 93
4.3.1.2.2 Project need establishment at integrated local level 95
4.3.1.3 Prepare initial Project Concept 101
4.3.1.4 Prepare Project Execution Plan 102
4.3.1.5 Summary 102
4.3.2 Phase One - Conception of Need 106
4.3.2.1 Introduction 106
4.3.2.2 The Logical Framework 106
4.3.2.2.1 Stakeholder analysis 108
4.3.2.2.2 Problem analysis 110
4.3.2.2.3 Analysis of objectives 110
4.3.2.2.4 Analysis of strategies 111
4.3.2.2.5 Building the Logframe matrix 113
4.3.2.2.6 Quality factors analysis 117
4.3.2.3 Prepare a Detailed / Full Project Concept 118

4.3.2.4 Prepare a Project Brief 119
4.3.2.5 Summary 119
4.3.3 Phase Two - Feasibility Studies 122
4.3.3.1 Introduction 122
4.3.3.2 Appoint the feasibility study team 123
4.3.3.3 Scope the study 123
4.3.3.4 Evaluate existing situation 125
4.3.3.5 Design and cost different options 130
4.3.3.5.1 Designing the scheme 130
4.3.3.5.2 Costing the options 136
4.3.3.6 Cost / Benefits analysis of alternatives 137
4.3.3.7 Determine project selection criteria 138
4.3.3.8 Prepare Project / Financing Proposal 140
4.3.3.9 Revise the Project Concept 141
4.3.3.10 Revise Project Brief and Execution Plan 141
4.3.3.11 Summary 141
4.3.4 Phase Three – Prepare Work Plans 144
4.3.4.1 Introduction 144
4.3.4.2 Delegate authority 145
4.3.4.3 Set institutional framework 146
4.3.4.4 Recruit core project staff & establish the organization structure 146
4.3.4.5 Verify scope of work 147
4.3.4.6 Identify work plan activities & allocate responsibilities to stakeholders 149
4.3.4.7 Prepare activity schedule & work plan budgeting and cash flow 151
4.3.4.8 Establish funds disbursement procedures 152
4.3.4.9 Establish procurement procedures 153
4.3.4.10 Establish audit and evaluation procedures 155
4.3.4.11 Establish management information system 156
4.3.4.12 Develop environmental plan 156
4.3.4.13 Prepare routine maintenance plan 156
4.3.4.14 Revise the logframe 157

4.3.4.15 Review work plan 157
4.3.4.16 Summary 157
4.3.5 Phase Four -Developing Production Information 161
4.3.5.1 Introduction 161
4.3.5.2 Recruit and orient project team 161
4.3.5.3 Launch the project 163
4.3.5.4 Conduct baseline survey 164
4.3.5.5 Building contracting capacity 166
4.3.5.5.1 Establish the training institution 167
4.3.5.5.2 Assess training needs 169
4.3.5.5.3 Identify and select trainees 170
4.3.5.5.4 Develop training materials 171
4.3.5.5.5 Conduct training 173
4.3.5.6 Review and modify contracts documents 176
4.3.5.7 Identify and select actual projects for the programme 178
4.3.5.8 Procure work package suppliers 178
4.3.5.8.1 Pre-Qualification 179
4.3.5.8.2 Tendering (Competitive bidding) 180
4.3.5.9 Summary 183
4.3.6 Phase Five - Construction 186
4.3.6.1 Introduction 186
4.3.6.2 Authorize work to be done 186
4.3.6.3 Sensitisation meetings with communities 187
4.3.6.4 Recruitment of labour 188
4.3.6.5 Monitor procurement 189
4.3.6.6 Progress review meetings 193
4.3.6.7 Progress reporting 196
4.3.6.8 Controlling Cost and Schedule 198
4.3.6.9 Manage health and safety issues 199
4.3.6.10 Manage general operational issues 200
4.3.6.11 Implement maintenance system 200

4.3.6.12 Undertake interim and final evaluations 205
4.3.6.13 Closing the project (implement hand over plan) 207
4.3.6.13.1 Prepare final project report 207
4.3.6.13.2 Project Closure Meeting 208
4.3.6.14 Summary 209
4.3.7 Phase Six – Operation and Maintenance 212
4.3.7.1 Introduction 212
4.3.7.2 Undertake post project evaluation 212
4.3.7.2.1 Undertake ex-post evaluation 212
4.3.7.2.2 Undertake impact assessments 213
4.3.7.3 Ongoing review of facilities life cycle 215
4.3.7.4 Summary 216
4.4 Phase Reviews 218
4.4.1.1 Introduction 218
4.4.1.2 Gate status in the process 218
4.4.1.3 Phase review outcomes 218
4.4.1.4 Phase review membership 219
4.4.1.4.1 National level 219
4.4.1.4.2 Integrated local level 220
4.4.1.5 Summary 220
4.5 Chapter Summary 221
4.5.1 Activity Zones 221
4.5.2 Phases and deliverables 223
4.5.3 Phase reviews and legacy archive 228
5 CHAPTER 5: THE KEY RISK FACTORS IN IMPROVING THE MANAGEMENT PROCESSES OF LABOUR BASED WORKS 231
5.1 Introduction 231
5.2 Risk identification & risk response 231
5.2.1 Project complexity 232
5.2.2 Procurement management 233
5.2.3 Financing of equipment for SMEs 234

5.2.4 Financial management 235
5.2.5 Labour wages 237
5.2.6 Seasonal variations of labour 239
5.2.7 Targeting methods of beneficiaries 240
5.2.8 Incentive schemes 242
5.2.9 Maintenance of rehabilitated infrastructure 242
5.2.10 Local participation 243
5.2.11 Safe working environment 245
5.2.12 Political will and commitment 246
5.3 Risk monitoring and control 247
5.3.1 Progress meetings and progress reporting 247
5.3.2 Labour attendance register 248
5.3.3 Measurements & payments for SMEs 248
5.3.4 Change request approvals 249
5.3.5 Schedule simulation 250
5.3.6 Cost simulation 251
5.3.7 Progress performance measurement 251
5.4 Summary 251
6 CHAPTER 6: REVIEW, CONCLUSION AND RECOMMENDATIONS 253
6.1 Introduction 253
6.2 Review of the research 253
6.3 Summary of key findings 254
6.3.1 The Management processes of labour based works 254
6.3.1.1 Activity zones 254
6.3.1.2 Phases and deliverables 258
6.3.1.3 Phase reviews and legacy archive 261
6.3.2 Risk and risk management in labour based works 261
6.4 Conclusion 262
6.5 Recommendations for further work 263
7 Web Resources 265
8 Project Documents 267

9 References 268
10 Appendices 274
10.1 Appendix 1 275
10.2 Appendix 2 276
10.3 Appendix 3 277
10.4 Appendix 4 283
10.5 Appendix 5A 286
10.6 Appendix 5B: 300
10.7 Appendix 5C: 301

List of Figures

Figure 2-1: US$1 a day poverty headcount, by region, 1980 - 2003 (% of Population) 14
Figure 2-2: Rural-urban differentials, various years (percentage points) 16
Figure 2-3: The relationship between poverty and population growth 19
Figure 2-4: Total population by major region, estimates, (1950-1995) and projections (1995 to 2050) 21
Figure 2-5: Annual absolute population growth and population growth rate for the world, estimated (1950-1995) and projected (1995-2050) 22
Figure 2-6: A framework for risk management (adopted from CAN / CSA - Q634-91) 66
Figure 2-7: Risk management model 66
Figure 4-1: Organogramme for National Level Unit 77
Figure 4-2: Local Government Administrative Structure 79
Figure 4-3: The Local Level Institutional Planning Framework (Malawi and Ghana). 80
Figure 4-4: Phase zero process flow diagram 105
Figure 4-5: Objective Tree 111
Figure 4-6: Analysis of Strategies 112
Figure 4-7: Phase one process flow diagram 121
Figure 4-8: Organization for DCTPC Road Section 132
Figure 4-9: Standard Cross-Section 134
Figure 4-10: Work Programme for Contractor Training in Malawi (2002) 136
Figure 4-11: Phase two process flow diagram 143
Figure 4-12: Phase three process flow diagram 160
Figure 4-13: Organisation structure for site personnel 162
Figure 4-14: Training Models - Ghana and Tanzania 168
Figure 4-15: Bidding Process for GoM / EU PWP(2005) in Malawi 181

Figure 4-16: The Bidding Process in Cambodia (1999) 182
Figure 4-17: Phase four process flow diagram..... 185
Figure 4-18: Phase five process flow diagram 211

List of Tables

Table 2-1: Rates of poverty in a sample of African countries 15
Table 2-2: Structural transformation indicators for selected African countries 18
Table 2-3: Total population estimates (1950B1995) and projections (1995B2050), by region 23
Table 2-4: Process Protocol principles 39
Table 2-5: Process Protocol activity zones 41
Table 4-1: Agency arrangement for National Programmes 76
Table 4-2: Local Works Authority Models 80
Table 4-3: Local Authority Rural Infrastructure Development Arrangement 81
Table 4-4: Production arrangement, approaches and basic delivery mechanisms 83
Table 4-5: Institutional arrangement for IGPWP (2001) 84
Table 4-6: Country experience with household surveys 91
Table 4-7: Country experience with development strategy 92
Table 4-8: Phase zero processes and deliverables 104
Table 4-9: LFA Terminology 107
Table 4-10: Feeder Roads: Stakeholder Analysis 109
Table 4-11: Summary of steps in building logframe 114
Table 4-12: IGPWP Logical Framework 116
Table 4-13: Phase one process and deliverables 120
Table 4-14: Objective framework for a feasibility study 124
Table 4-15: Situational analysis for labour based works in Lao PDR 125
Table 4-16 : Average Task Rates 134
Table 4-17 : Cost Comparison: Labour vs Equipment in Lao PDR (2002) 137
Table 4-21: Phase two processes and deliverables 142
Table 4-22: Sample of scope for GoM / EU PWP 148
Table 4-23: Procurement Methodology (Amounts in Equivalent EUR) 154
Table 4-24: Procurement Plan (IGPWP - Malawi) 155
Table 4-25: Phase three processes and deliverables 159
Table 4-26: Training content for labour based works 172
Table 4-27: Country experience conducting training 174
Table 4-28: Phase four processes and deliverables 184

Table 4-29: Agenda for meeting with a contractor **195**
Table 4-30: Monitoring Forms Summary for IGPWP in Malawi **196**
Table 4-31: Phase five processes and deliverables **210**
Table 4-32 : Experiences with maintenance of rural infrastructure **215**
Table 4-33: Gate status of the process **218**
Table 4-34: Phase Review outcomes and reports **219**
Table 4-35: Summary of activity zones **221**
Table 4-36: summary of institutional arrangements for LBIPs **223**
Table 4-37: Summary of phases and processes **224**
Table 4-38: Summary of phase deliverables **226**
Table 4-39: Summary of processes not relevant to labour based works **227**
Table 4-40: summary of phase reviews **229**
Table 6-1: Summary of Central organisation responsibilities **255**
Table 6-2: Summary of integrated local level responsibilities **256**
Table 6-3: Summary of phases **258**
Table 6-4: Summary of phase review elements **261**
Table 6-5: Summary of phase deliverables not relevant to labour based works **263**

List of Abbreviations

ADC	Area Development Committee
AB	ASIST Bulletin
ADB	Asian Development Bank
CDM	Construction Design Management (Regulations)
CIDA	Canadian International Development agency
CARE	Cooperative for Assistance and Relief Everywhere
CRIMP	Central Region Infrastructure Maintenance Programme
DA	District Assembly
DANIDA	Danish International Development Agency
DEC	District Executive Committee
DDC	District Development Committee
DDP	District development Plans
DCTPC	Department of Communication, Transport, Post and Construction
DFID	Department for International Development
DFR	Department of Feeder Roads (Ghana)
EPWP	Extended Public Works Programme
EI	Employment – Intensive
EP &D PPM	Ministry of Economic Planning and Development Project Planning Manual (Malawi)
EC	European Commission
EDF	European Development Fund
EU	European Union
FIDIC	Federation of International Consulting Engineers
Govt	Government
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (GmbH)
GDP	Gross Domestic Product
GoM	Government of Malawi
GoM / EU PWP	Government of Malawi / European Union Public Works Programme
GPRS	Ghana Poverty Reduction Strategy

KFW	Kreditanstalt For Wiederraufbau
ICE	Institute of Civil Engineers
IBRD (ibid)	International Bank for Reconstruction and Development
IGPWP	Income Generating Public Works Programme
IMF	International Monitoring Fund
ILO	International Labour Organization
IRR	Internal Rate of Return
IRAP	Integrated Rural Accessibility Planning
LBIP	Labour Based Infrastructure Programme
Logframe	Logical Framework
LFA	Logical Framework Approach
LBIP	Labour Based Infrastructure Programme
LIPW	Labour Intensive Public works
Lao PDR	Lao People's Democratic Republic
MASAF	Malawi Social Action Fund
MAFE	Malawi Agro-forestry Extension Project
MIS	Management Information System
MWK	Malawi Kwacha (currency)
MWTC	Ministry of Works, Transport and Communication
MoWHC	Ministry of Works, Transport, Housing and Communication
MPRSP	Malawi Poverty Reduction Strategy Paper
MCTPC	Ministry of Communication, Transport, Post and Construction
MRTTP	Malawi Rural Travel and Transport Programme
NAO	National Authorising Office
NEC	New Engineering Contracts
NCIC	National Construction Industry Council
NRA	National Roads Authority
ODA	Overseas Development Agency
PMO	Project Management Office
PMU	Programme Management Unit
PIU	Project Implementation Unit

PSC	Programme Steering Committee
PRA	Participatory Rural Appraisal
PRSP	Poverty Reduction Strategy Paper
Pro	Regional Seminar Proceedings (ILO)
PC M / EU	Project Cycle Management Manual / European Union
PMGSY	Pradhan Mantri Gram Sadak Yojana
PWP	Public Works Programme
RAMPA	Rural Accessibility and Mobility Pilot Activity
RMP	Rural Maintenance Programme
RRA	Rapid Rural Appraisal
RSA	Rapid Social Assessment
SPWP	Special Public Works Programmes
SIDA	Swedish International Development Authority
SDA	Social Dimension of Adjustment
SME	Small and Medium Enterprises
ToR	Terms of Reference
Taka	Bangladesh Currency
TPU	Transport Planning Unit
UN	United Nations
UNDP	United Nations Development Programme
USAID	United States of America International Development Agency
UNDCP	United Nations Drug Control Programme
VDC	Village Development Committee
WFP	World Food Programme

1 CHAPTER 1: INTRODUCTION

This chapter introduces the research and explores the rationale for this study. It further defines the research problem addressed in this study and discusses research methodology and scope of the study. The chapter also includes the overall structure of this thesis.

1.1 Introduction

It is widely accepted that poverty is a multidimensional problem, which means that poor people would remain such due to a number of reasons, and would not escape poverty unless several conditions are met. However, there is good evidence that an improvement in living conditions can be achieved through better access to productive resources, remunerated employment, and/or basic services (transport, housing, education, health). Labour based public works programmes offer an attractive complement to a bundle of development instruments for poverty alleviation *(Von Braun, 1991:6)* as it provides both remunerative employment *(Islam, 2004)* and create assets in poor rural areas where infrastructure is poorly provided for.

Due to the fragmented nature of the construction industry *(Emmerson, 1962),* labour based works have been adversely affected with poor performance and low productivity though it yields more benefits to the poor. Employment intensive – technology has a few difficulties which need to be resolved (*Thwala, 2001)*. Most of these construction problems have been management process related and not product related *(Kagioglou, 1998)*. *McCutcheon (2008:28)* considers it essential that the construction and maintenance of public works should take account of the process as well as the product. Prompted by the need to improve the construction process of labour based works in order to achieve improved performance*, McCutcheon (1995), International Bank for Reconstruction and Development (IBRD) and Gaude (1987)* subsequently made proposals related to the construction process. The phased construction process consisted of orientation, preparatory works, piloting and expansion into national programmes. This process highlighted activities that are executed during construction phase of the project. This research has been designed to develop an understanding of sequential steps and documentation thereof of labour based public works programmes based on the framework of the Process Protocol. The Process Protocol *(Kagioglou, 2000)* looks at construction projects from inception through construction to

commissioning or handover. It is based on experiences from the manufacturing sector as a reference point to map the entire project process from the client's view of a new or emerging need, through to operations and maintenance. The project is mapped by breaking it down into eight areas called activity zones, namely Development, Project, Resource, Design, Production, Facilities, Health & Safety and Legal, and Process Management. Ideally the Process Protocol aims to

- Integrate the various participants of a project into multi-functional teams
- Make sure these teams operate in a stage-gate based project environment
- Increase transparency in the production environment
- Enables design fixity
- Reduces downtime caused by late deliveries of certain project activities by clearly mapping the deliverables.

The long history, varying motivations, and the complexity of many design features of the labour based works programme render it less amenable to an understanding of what makes the programme a success, and under what country circumstances, and when is the programme likely to serve as a good candidate to accomplish the outcomes expected of it *(Ninno, Subbarao and Milazzo, 2009:2).* The ever increasing complexity of labour based works projects has many related shortcomings. As these construction projects are characterized as very complex projects, uncertainty comes from various sources. *Voetsch, Cioffi, and Anbari (2004); Klemetti, (2006:1)* found a statistically significant relationship between management support for risk (uncertainty) management processes and a reported project success. Since risk (uncertainty) management processes are related to a reported project success, the assessment of such risks in labour based works would be beneficial and learning points for future programmes can be drawn. This study shall, therefore, also identify the risk factors that affect management processes of labour based works to be a success. By knowing the risks factors, those countries or governments embarking on labour based works projects will be able to devise sound monitoring and control measures so that the projects can be implemented within budget, time and of improved quality.

The results of this study will expand the knowledge on management processes of labour based works projects and will enable project participants to identify risks in order to facilitate improved

project implementation situations, thereby optimising project work for the benefit of the rural poor.

1.2 Rationale for the Study

Labour intensive public works programme is not a new phenomenon. As such, and because it acts as an economic policy tool, both as fiscal measure to expand or contract public spending in periods of unbalanced domestic demand *(Thwala, 2006)* and with the advent of Millennium Development Goals, labour intensive public works programme shall continue to be a predominant instrument to fast track transfer of either cash or food to the rural poor through creation of short term employment.

Quisumbing, (2004:1) said that 'given their history, it is no surprise that debates on public works continue to this day. Recurrent issues in public works are the pattern of participation, the timing and type of project creation, the possibility of leakage to non-target groups, the distribution of benefits from assets created, and the technical efficiency of the assets themselves'. Despite their valuable contribution to employment-generation, many of these earlier experiments in employment-intensive public works in Africa suffered from one or more of the following short-comings *(Barker, 1986; Abedian and Standish, 1986; UNDP and ILO, 1987, Ligthelm and Van Niekerk, 1986, McCutcheon, 1990, 1994, 2001; McCutcheon and Taylor-Parkins, 2003; and Thwala, 2001)*:

- the ad hoc nature of schemes, lacking spatial focus and often without any links to national rural development and infrastructure planning systems;
- makeshift administrative arrangements and failure to inject sufficient managerial and engineering skills and technical competence into project selection and execution, as well as choice of technology, resulting in poor project planning, programming and manpower management;
- lack of balance between centralization and effective involvement of local administrations and popular bodies in crucial programme decisions, planning and implementation;
- failure to adjust programme operation and intensity to seasonal labour demand for agricultural operations;

- lack of precision about target groups and programming on the basis of inadequate information about beneficiary groups;
- lack of adequate and sustained political commitment and allocation of public funds for the programmes;
- Inadequate post-project maintenance arrangements; and inadequate emphasis on, and arrangements for, reporting cost-benefit studies and general performance evaluation.

The research is based on the premise that the contributing factors to above shortcomings is due to limited research on management processes that can be automated with modern technological advances to form a standard approach. The literature has shown that three phased approach by *Gaude (1987)* and International Bank for Reconstruction Development; and four phased approach by *McCutcheon (1995)* are the only management processes for labour based works which have been in use for the past thirty years. The study therefore intends to assess the use of Process Protocol as a tool to map out the process on a project point of view so that labour based works can be managed effectively and efficiently for creation of value for money and better befits for the impoverished. *Soares and Anderson, (1997)* argued that process modelling assures improvement in process performance and such modelled construction process can easily be automated *(Shirazi, 1996).* It is particularly useful for understanding points of review, identifying critical information flow and data relationships.

1.3 The Problem Statement

The overall aim / purpose of this research is: *" to assess the use of Process Protocol to analyse the key sequential phases and documentation for management of labour based works in order to form a common standardized approach"*. In this context, two key objectives were identified as set out in the next paragraph.

1.4 Objectives of the Research

In order to achieve the research aim, two key objectives were set. The two key objectives are:

- to identify key processes and sub-processes for delivery of labour based works
- to identify key risk factors in improving the management processes of labour based works

1.5 The Research Methodology

This research was conducted within qualitative paradigm and exploratory research methods of gathering data were adopted. Qualitative research requires study of spoken and written representations and records of human experience, using multiple methods and sources of data. Extensive literature review was undertaken in this research and oral or email interviews were only conducted to supplement the gathered data. The literature review gave an overview of the background to labour based works, use of labour based works in poverty alleviation programmes, recent categories of labour based works, challenges facing labour based works and management processes. The literature material consists of several recent articles published in international journals, papers presented in labour based technology and Rural Transport Infrastructures (RTI) conferences, ILO ASIST Bulletins, project documents for Government of Malawi / European Union Public Works Programme (GoM / EU PWP) and Income Generating Public Works Programme (IGPWP) in Malawi and a few related development and project management books. The internet was extensively used to source the literature.

1.6 Limitations and Delimitations of the Research

This study confined itself to any country which had experiences with labour based works so that lessons could easily be learnt.

As data collection and interpretation was based on literature, the research was subject to data availability. The data available was also of different periods and had variations in content and approaches to work.

1.7 The Thesis Outline

Chapter One

Chapter one introduces the research. It describes the rationale for the study, problem statement, objectives, research methodology as well as the limitations and delimitations of the research.

Chapter Two

Chapter two reviews related and previous work in the subject area. It describes the background to labour based works, link of poverty to employment creation, management processes and previous reviews to improve the management processes of labour based works. Finally it gives an overview of the Process Protocol in terms of principles, elements and advantages.

Chapter Three

Chapter three reviews research methods that have been adopted for the research. It also defines research design, sampling, data collection methods and data analysis.

Chapter four

Chapter four identifies the management processes and sub-processes of labour based works using the Process Protocol by reviewing the project life cycle of labour based works. It maps out the processes by utilizing the activities, deliverables and activity zones as indicated on the Process Protocol

Chapter Five

Chapter five identifies key risk factors in improving the management processes of labour based works. After the identification of the issues, it then reviews the practices and experiences in responding, monitoring and controlling such risks.

Chapter Six

Chapter six presents conclusion and recommendations of the research.

1.8 Summary

This chapter introduced the main issues analysed in each chapter and the arguments raised in each one as well as the conclusions drawn. The chapter was therefore intended to be an introduction of the contents of the chapters of the thesis.

2 CHAPTER 2: REVIEW OF RELATED WORK

2.1 Introduction

This Chapter sets out the literature review for the research. It commences with definition of concepts and reviews relevant literature in the following areas: labour based public works programmes, poverty and employment creation programmes, existing management processes for labour based works and finally it looks at the assessment tool – the Process Protocol and risk and risk management in labour based work projects.

2.2 Definitions of concepts

Definition of key concepts are provided below to clarify their meaning in this research

2.2.1 Definition of 'Construction Management'

Kweku, (1987:5) defined construction management as a fusion of old established construction practices with current technological advances and latest management methods into one completely integrated working system to control time, cost and quality in the design and construction process.

2.2.2 Definition of a 'Process'

The term **'**process' can have different meanings for different people depending on the sector, function and market within which they are operating.

Talwar (1993) defines process as a "sequence of pre-defined activities executed to achieve a pre-specified type or range of outcomes".

Harrington (1991) refers to a process as "any activity or group of activities that takes an input, adds value to it and provides output to an internal or external customer. Processes use an organization's resources to provide definitive results".

Davenport (1993) states that "a process is simply a structured, measured set of activities designed to produce a specified output for a particular customer or market" and he continues stating that "processes are the structure by which an organization does what is necessary to produce value for its customers.

2.2.3 Definition of 'Labour based technology'

Labour based technology as defined by Majeres *and De Veen, (2001:1)* is the use of and management of locally available human and material resources for the construction and maintenance of infrastructure.

For a number of activities, an appropriate mix of labour and equipment is required to provide products of adequate quality in a cost – effective manner. Appropriate labour based technology aims at applying a labour / equipment mix that gives priority to labour but supplement it with light equipment where necessary for the reasons of quality or cost. The term labour based thus indicates that a flexible and optimal use is made of labour as the predominant resource, while cost effectiveness and quality aspects are ensured.

2.2.4 Definition of 'public works programmes'

Ninno, Subbarao and Milazzo (2009:1) defined a *public work programme* (*or workfare)* is the one where a federal or a provincial government or a donor agency or an NGO finances and/or implements a programme that creates temporary jobs for workers.

The output of such a programme is twofold: jobs of short duration for workers to increase their income, and creation of public goods in the form of new infrastructure or improvements of existing infrastructure, or delivery of services. Inputs are wage cost (in cash or kind), managerial costs and material costs. The outputs in turn are expected to lead to three final outcomes (impacts): (a) increased income and consumption-smoothing, (b) a reduction in poverty and poverty gap ratio, and (c) infrastructure development. Public works programme can have all three outcomes as main objectives but any combination of outputs, inputs and outcomes is possible.

2.2.5 Definition of 'Poverty'

Poverty is generally defined in development literature as the inability of individuals, households, or entire communities, to command sufficient resources to satisfy a socially acceptable minimum standard of living. Other characteristics of poverty are – " alienation from the community ……food insecurity…..crowded houses….usage of basic forms of energy…lack of adequately paid secure jobs… and fragmentation of family*" (May ed, 1998:3 – 4).*

Sigh and Titi (1995:9 – 11) defined *poverty* as " a condition of lack of access to options and entitlements which are social, political, economic, cultural and environmental".

For *Lauer (1992:196)*, *poverty* is when people are poor, and "to be poor is to be unable, because of a lack of monetary resources, to secure adequate food, shelter, clothing, health care, recreation, and the other necessities (much less the amenities) of life for oneself or one's family."

Haralambos and Holborn (1995:124) state that *poverty* is "a shortage of money required to buy those commodities judged to be acceptable for maintaining an acceptable standard of living."
The review of related works indicates multiple definitions exist (e.g. *May ed, (1998: 3 – 4,) Sigh and Titi (1995:9 – 11), Lauer, (1992:196), Haralambos and Holborn (1995: 124)* with slight variances in terms of scope and context. For simplicity, A definition adopted by this study is a combination of *Sigh and Titi, Haralambos and Holborn* definitions. *Poverty* is defined as either a state of isolation to options or a shortage of money required to buy those commodities judged to be acceptable for maintaining an acceptable standard of living.

2.2.6 Definition of an 'Assessment Tool'

According to a research by *Du Plessis, (2004),* the concepts 'assessment' and 'tool' are defined as follows as per Webster dictionary (1998).

'An assessment is a valuation made by authorized persons according to their discretion … for the purpose of fixing ….'

'A *tool* is something used in the performance of an operation or an instrument'

An assessment tool for purpose of this study shall be a diagnostic instrument for documenting / evaluating a series of steps, procedures and documentation that has been used to bring about the successful completion of labour based works programmes.

2.2.7 Definition of 'Process Protocol'

The *Process Protocol* is defined as "… a common set of definitions, documentations and procedures that provides the basis to allow a wide range of organizations involved in a construction process to work together seamlessly *(Kagioglou, 1998).*

2.2.8 Definition of 'Project'

The definition of Project used in this study is a combination of definitions by *Turner, (1993:14) and Kerzner, (1997)*

A *Project* is a sequence of connected events, with a definite start and end, which is a unique scope of work targeted towards generating a well defined outcome, undertaken in an organization to achieve beneficial change.

2.2.9 Definition of 'Project Risk'

A broad definition of *project risk* is the implications of the existence of significant uncertainty about level of project performance available. A source of risk is any factor that can affect project performance and risk arises when this effect is both uncertain and significant in its impact on project performance *(Chapman and Ward, 2000:7).*

2.2.10 Definition of 'Project Risk Management'

The project management body of knowledge *(PMBOK, 2004:237)* defined Project Risk Management as the process concerned with identifying, analysing and responding to uncertainty (throughout the project life cycle). It includes maximizing the results of positive events and minimizing the consequences of adverse events.

2.3 Labour Based Works

This section reviews previous and related work on the concept of labour based technology and public works programmes and explores the link between employment creation and poverty.

2.3.1 Background

Most governments and the international community have been opting for labour based methods of work to create employment and infrastructure in poverty stricken areas.

For example,

- Sub-Saharan Africa: Botswana employed 21% of its labour force in 1985 – 1986, Kenya generated 24 million worker days between 1974 and 1996;
- Latin America: Chile scheme provided 13% of employment in 1983,
- South Asia: India provided a billion person days of work in 1995.

Employment creation programmes are an important policy instrument, especially in low- and middle income countries where rates of unemployment and underemployment are high, the employment intensity of growth is low or even declining, and macroeconomic shocks or natural disasters can undermine livelihoods and require income-stabilizing interventions *(Devereux and Solomon, 2006:1).* Since 1975, the World Bank began to finance projects in countries where the lessons from results of 1973 - 1976 study on labour based works were being applied: Benin, Burkina Faso, Cameroon, Chad, Colombia, Dominican Republic, Honduras, Kenya, Lesotho, Malawi, the Philippines, Senegal, and Togo. The International Labour Organisation (ILO) began to provide technical assistance to other countries that were starting labour-based works, including Ethiopia, Guatemala, and Mozambique *(Stock and de Veen, 1996:1).*

Labour based works have been employed in maintenance and construction of new infrastructure e.g. roads, irrigation schemes, waste management schemes. Ultra thin continuous reinforced concrete pavement in South Africa is done with labour based methodologies as contribution to poverty reduction *(Kannemeyer, 2007).* 1400km of gravel road was rehabilitated in Ghana from 1986 to 1996. India and China repaired thousands of kilometres of road with hot mix asphalt by labour based methods (*de Veen and Thagesen, 1995).*

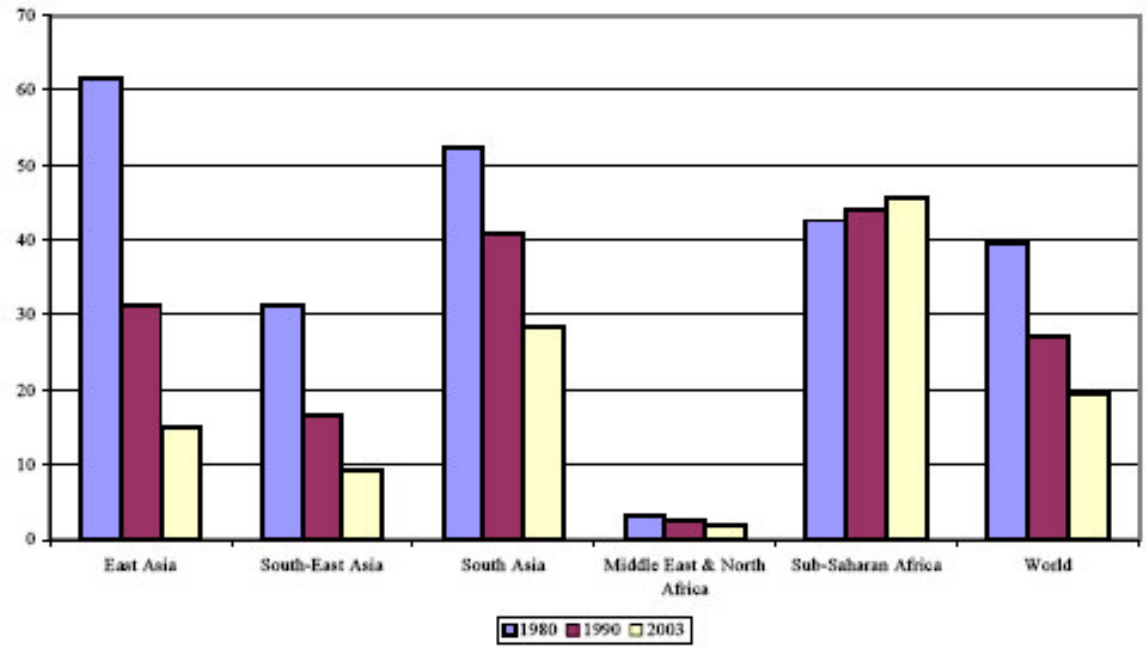
In middle-income countries like Argentina, Botswana and South Africa, employment programmes are usually financed entirely out of domestic fiscal resources. The *Trabajar* public works programme in Argentina during the 1990s was financed by the Federal government, using a fund raised through a national pay-roll tax – the *Fondo Nacional de Empleo (Márquez 1999: 8)*. These projects were mostly small-scale labour intensive public works (roads, social infrastructure, sanitation works) and were implemented by decentralized local government agencies and NGOs operating at sub-national level.

In very poor countries with severe fiscal constraints, especially in Africa, employment programmes are often fully financed or co-financed by grants from international donors, or concessional loans from international financial institutions. Tanzania's Special Labour Intensive Public Works Program, for example, was jointly implemented by the Government of Tanzania, United Nations Development Programme (UNDP) and the ILO, but was co-funded by Denmark, Germany, the Netherlands and the European Union *(Tesfaye 1995:159).* Where donors play a major role in providing financial support, they also tend to dominate the design of these programmes, by providing technical assistance as well as paying for operating costs *(Devereux and Solomon, 2006:5).*

Many countries carried out labour-based works by "force account" units. Force account (departmental force) units are public agencies that carry out all aspects of construction "in house." They supervise, manage, and control their machines and labour directly. By 1978, the focus began to shift from force account to contracting. The World Bank's *Guide to Competitive Bidding on Construction Projects in Labour Abundant Economies (World Bank 1978a)* argued that administrative procedures (such as designs, contract documents, project packaging, and methods of finance) were often biased toward equipment-based methods even when a more labour-based technology could be justified. The guide stated that by "neutralizing" the contract and administrative procedures, bidders would naturally select a more appropriate technology mix *(Stock and de Veen, 1996:1).*

2.3.2 Employment Creation and Poverty

Research evidence from the better documented Asian experience, particularly India and Bangladesh, shows that labour based schemes effectively target the poor especially the landless and near-landless rural households *(Ravallion, 1991; Dev, 1995; Osman and Chowdhury, 1983; and Ahmed, 1995).* By adopting the comparative data by *Nkurunziza (2006)* and *World Bank, (1994)* to reflect the income or consumption dimension (*Sigh and Titi, Haralambos and Holborn* definitions) of poverty, any person or household whose expenditure is below US$1 per day is poor. With respect to this definition or measure, distribution of poverty worldwide is shown in Figure 2-1 below.



Source: ILO (2004c).

Figure 2-1: US$1 a day poverty headcount, by region, 1980 - 2003 (% of Population)

Despite a steady increase in real Gross Domestic Product (GDP) in Africa over the last ten years, Fig.2-1 shows that Africa is the only region where poverty has been rising in the last three decades. Poverty (as measured by the headcount ratio) stagnated at high levels in Sub-Saharan Africa, while it declined in other parts of the world. In 2003 about 46% of the Sub-Saharan

Africa population lived on less than US$1 a day—slightly more than in 1980 and 1990. At the global level, however, the share of the population living on US$1 a day declined from 40% in 1980 to 20% in 2003. The US$1 a day headcount ratio in Sub-Saharan Africa now exceeds the next poorest region, South Asia, by about 17 percentage points. Thus, while East, Southeast and South Asia and North Africa are broadly on track to meet the Millennium Development Goal of halving poverty by 2015, there has been no progress in Sub-Saharan Africa towards achieving this goal *(UN 2004).* The high rates of poverty incidence are illustrated in Table 2-1

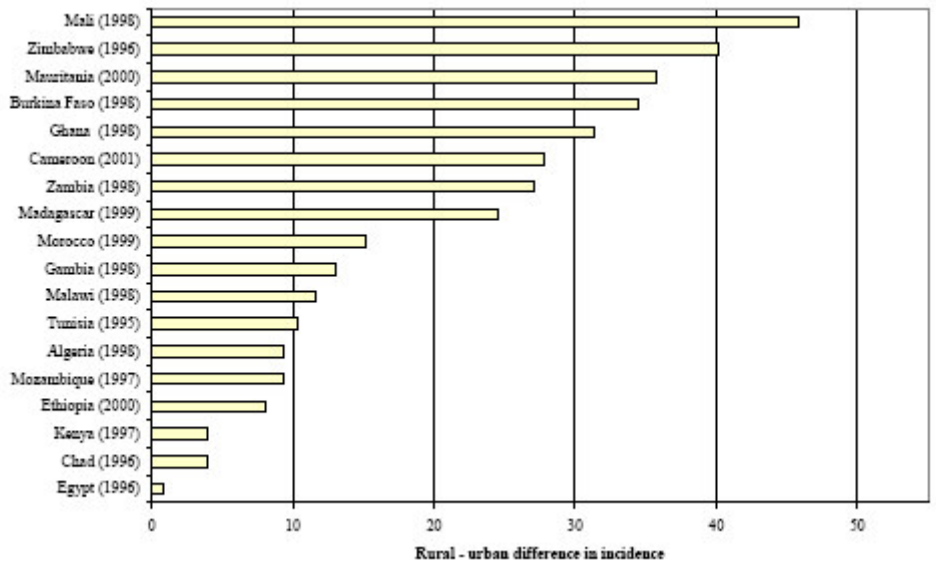
Table 2-1: Rates of poverty in a sample of African countries

County	Poverty Line	Source	Survey year	Headcount (%)
Botswana	1$/day	World Bank	1993	23.5
Burkina Faso	National	Kakwani et al.	1998	52.6
Burundi	National	Kakwani et al.	1998	61.2
Cameroon	National	Rep. Cameroon	2001	40.2
Côte d'Ivoire	National	Kakwani et al.	1998	36.7
Egypt	National	World Bank	2000	16.7
Ethiopia	National	Kakwani et al.	2000	40.9
Gambia	National	Kakwani et al.	1998	62.2
Ghana	National	Kakwani et al.	1998	43.6
Guinea	National	Kakwani et al.	1994	38.1
Kenya	National	Kakwani et al.	1997	49.7
Lesotho	1$/day	World Bank	1995	36.0
Madagascar	National	Kakwani et al.	2001	62.0
Malawi	National	Kakwani et al.	1998	63.9
Mauritania	1$/day	World Bank	2000	25.9
Mozambique	National	Kakwani et al.	1996	68.9
Nigeria	National	Kakwani et al.	1996	63.4
Tanzania	National	World Bank	2001	35.7
Tunisia	National	World Bank	1995	7.6
Uganda	National	Kakwani et al.	2000	48.2
Zambia	National	Kakwani et al.	1998	66.7
Zimbabwe	National	World Bank	1996	34.9

Note: Information in Table 2-1 is based on Kakwani et al. (2005); World Bank, World Development Indicators, CD-Rom; and Republic of Cameroon (2003).

Poverty rates are generally high across Africa. On the basis of information in Table 2-1, they vary from a high of 69 percent in Mozambique to a low of 7.6 in Tunisia. For eight out of 22

countries in the table, the rates are higher than 50 percent, implying that the majority of the population is poor in those countries. However, even at country level, the national average hides a dichotomy between rural and urban areas. The mean difference between incidence rates in urban and rural areas was 19.6 percentage points during 1995–2000. Poverty is known in Africa to be a rural phenomenon as illustrated in Figure 2-2.



Source: World Bank 2004.

Note: Data are from household surveys, which were not conducted in the same years in every country. Data refer to national (urban, rural and total) poverty lines.

Figure 2-2: Rural-urban differentials, various years (percentage points)

There are large inter-country rural-urban differentials, ranging from 0.8 percentage points in Egypt in 1996 to 45.8 percentage points in Mali in 1998; 40.1 percentage points in Zimbabwe in 1996 and 35.8 percentage points in Mauritania in 2000. Rural-urban differentials are generally high regardless of the overall level of incidence rates. When rural-urban differentials have declined, it has been mostly the result of a sharp hike in the incidence of poverty in urban areas rather than improvements in rural areas. In Kenya, for example, the rural-urban differential declined from 18 percentage points in 1994 to 4 in 1997—but urban poverty increased by a staggering 20 percentage points while rural poverty increased by only 5. Similarly, a decline of about 9 percentage points was observed in Zambia between 1996 and

1998 as a result of a 10 percentage point rise in urban poverty, while rural poverty remained at the very high level of about 83%. In Zimbabwe rural-urban differences increased as a result of sharper increases in rural poverty *(World Bank 2004).*

Rural-urban differentials in poverty tend to be persistent. In Cameroon, for instance, the incidence of poverty in urban areas (using the national poverty line) was halved in only five years—from 41.4% in 1996 to 22.1% in 2001. The corresponding change in incidence rates in rural areas (from 59.6% to 49.6%), though commendable by African standards, was significantly lower than the change in urban areas *(Republic of Cameroon, 2003).* The large differences between rural and urban poverty justifies the need for African countries to refocus their development strategies on the rural world.

In Africa, high fertility rates have translated to high levels of labour supply (see table 2-2). The working age population increased from about 281 million in 1985 to 375 million in 1995 and 489 million in 2005. By 2015 the working age population is projected to reach 616 million people *(UN 2004),* a sharp increase in the supply of labour, which will need to be met by an equivalent increase in job opportunities. These demographic trends make it difficult for Africa to attain a much needed structural transformation. Several socio-economic and cultural factors have contributed to persistently high fertility rates in Africa, including low levels of education for girls and lack of job opportunities for women, inadequate access to contraceptives, poor access to healthcare and education (which hampers human capital and skills development) and the adverse impacts of HIV/AIDS and the resurgence of malaria and tuberculosis, which have an adverse impact on life expectancy and the quantity and quality of the labour force *(Nkurunziza, 2006:4-14).*

Table 2-2: Structural transformation indicators for selected African countries

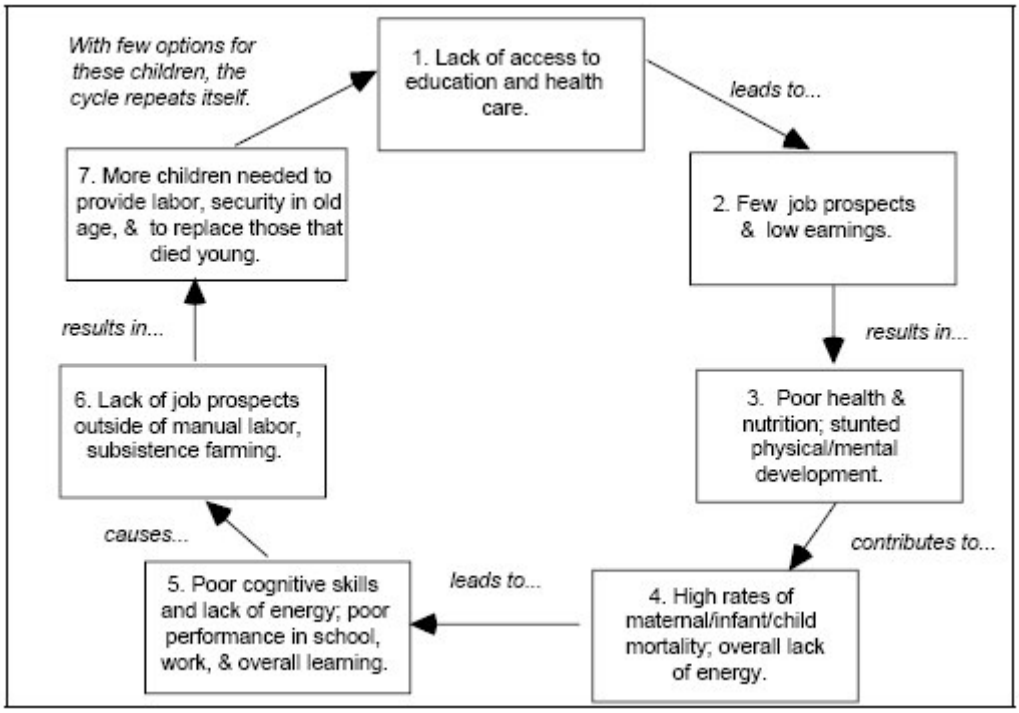
	Total fertility rate (births per woman)			Share of labour force in agriculture (%)			Labour force growth (%)		Agricultural value added per worker (1987 PPP US$)		Industrial growth (%)	
	1990–95	1995–2000	2000–05	1990	2000	2010[a]	1980–90	1990–97	1979–81	1994–96	1980–90	1990–97
All countries	**6.3**	**5.8**	**5.5**	**74**	**69**	**64**	**2.8**	**2.6**	**468**	**463**	**2.9**	**1.6**
Group A	5.1	4.5	4.0	61	56	51	3.2	2.5	667	662	2.9	2.1
Botswana	4.1	3.6	3.2	46	45	42	—	—	—	—	—	—
Ghana	5.5	4.8	4.4	59	57	54	3.1	2.7	813	684	3.3	4.3
Kenya	5.4	5.0	5.0	80	75	71	3.6	2.7	268	240	3.9	2.0
Namibia	5.8	4.8	4.0	49	41	34	2.4	2.5	1,295	1,458	1.1	2.9
Zimbabwe	4.8	4.1	3.6	68	63	56	3.6	2.3	294	266	3.2	–0.8
Group B	6.3	5.8	5.3	71	66	59	2.9	2.7	526	523	2.3	1.0
Cameroon	5.7	5.1	4.7	70	59	47	2.4	3	861	827	5.9	–3.8
Côte d'Ivoire	6.3	5.6	5.1	60	49	38	3.1	2.3	1,527	1,354	4.4	4.2
Madagascar	6.1	5.9	5.4	78	74	70	2.5	2.8	190	178	0.9	1.1
Nigeria	6.6	6.3	5.9	43	33	25	2.6	2.8	479	684	–1.1	0.5
Rwanda	6.9	6.2	5.7	92	91	89	3.2	2.3	306	206	2.5	—
Senegal	5.9	5.5	5.0	77	74	70	2.5	2.6	328	375	4.1	3.7
Tanzania	6.2	5.6	5.1	84	80	76	3.2	2.8	—	—	—	—
Togo	6.2	5.8	5.4	66	60	54	2.6	2.7	404	461	1.1	2.0
Zambia	6.4	6.0	5.7	74	69	63	3.1	2.8	116	100	1.0	–2.6
Group C	7.2	7.1	6.9	88	86	82	2.5	2.5	216	206	3.6	2.3
Burkina Faso	7.2	6.9	6.7	92	92	92	2	2.1	155	182	3.7	1.9
Burundi	6.8	6.8	6.8	92	90	89	2.6	2.6	218	177	4.5	–8.0
Malawi	6.8	6.4	6.1	87	83	79	3	2.4	162	156	1.9	3.5
Mali	7.4	7.2	6.9	86	81	75	2.3	2.6	251	259	7.0	2.1
Niger	8.2	8.2	7.9	90	88	85	3	2.9	292	256	–1.7	1.3
Uganda	7.1	7.1	7.1	85	80	75	2.2	2.7	—	—	6.0	13

— not available; a. Projected.

Note: See text for explanation of groupings.

Source: World Bank 1997, 1998; UNDESA 2004, 2005; FAO 2005; Kirk and Pillet 1998.

According to www.creativechange.net, *(1999 Creative Change Educational Solutions),* the relationship between poverty and population growth are shown in Figure 2-3.



Source: www.creativechange.net

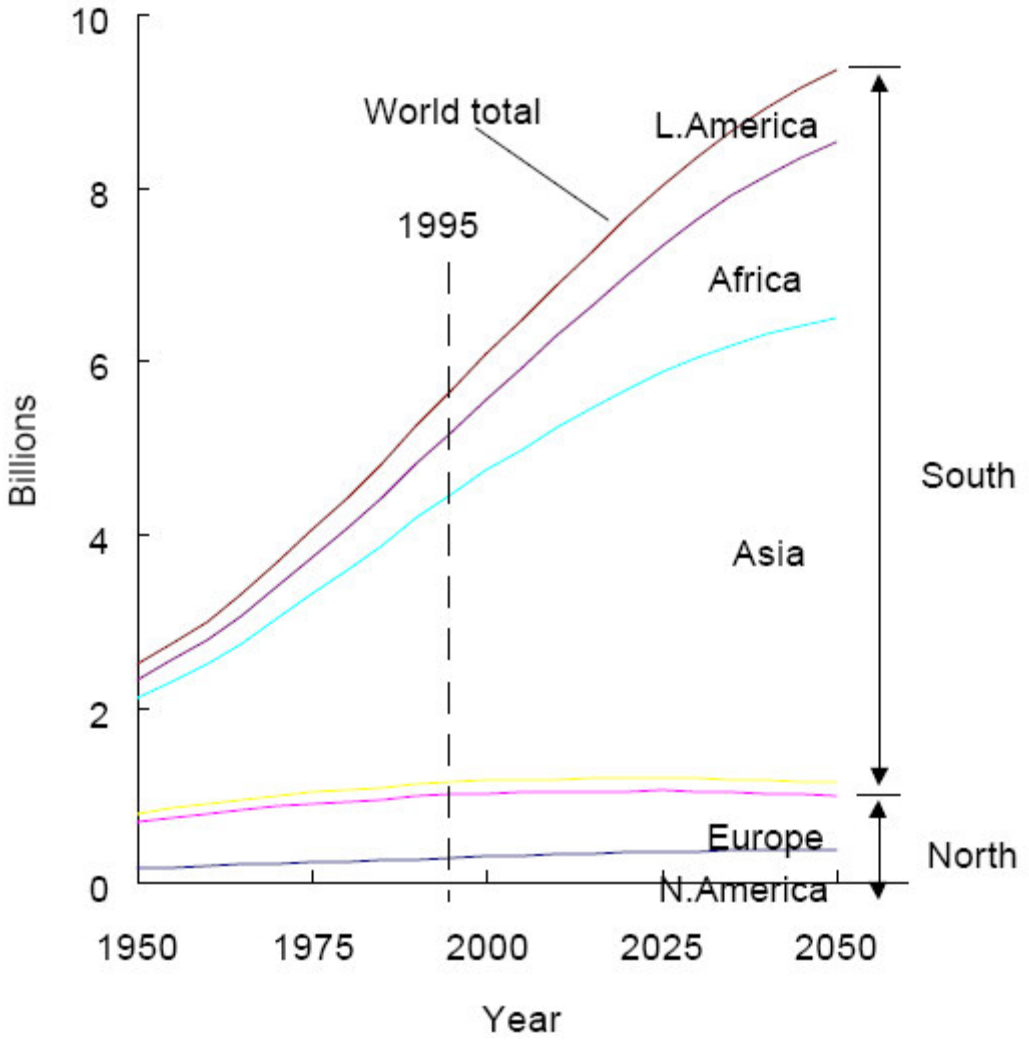
Figure 2-3: The relationship between poverty and population growth

According to the United Nations medium projections *(UN 1996),* the population of the world will continue to grow at least until 2050, when the total is expected to reach 9.4 billion. This represents an increase of 3.7 billion over the 1995 population of 5.7 billion. Nearly all of this future growth will occur in the "South"--i.e., Africa, Asia (excluding Japan, Australia, and New Zealand), and Latin America-- where population size is projected to increase from 4.5 to 8.2 billion between 1995 and 2050 (see Table 2-3). In contrast, in the "North" (Europe, Northern America, Japan, and Australia/New Zealand), population size is forecast to remain virtually stable, growing very slowly from 1.17 to 1.22 billion between 1995 and 2025, followed by a modest decline to 1.16 in 2050.

The plot of world population size over time is as shown in Figure 2-5. After rising steadily over the past several decades, annual increments in the world's population peaked at 87 million per year in the late 1980s and since then they have dropped slightly to 81 million per year in 1995–2000. This high level of growth will remain virtually unchanged through the first two decades of the 21st century before beginning a significant decline. After the year 2025, additions to the

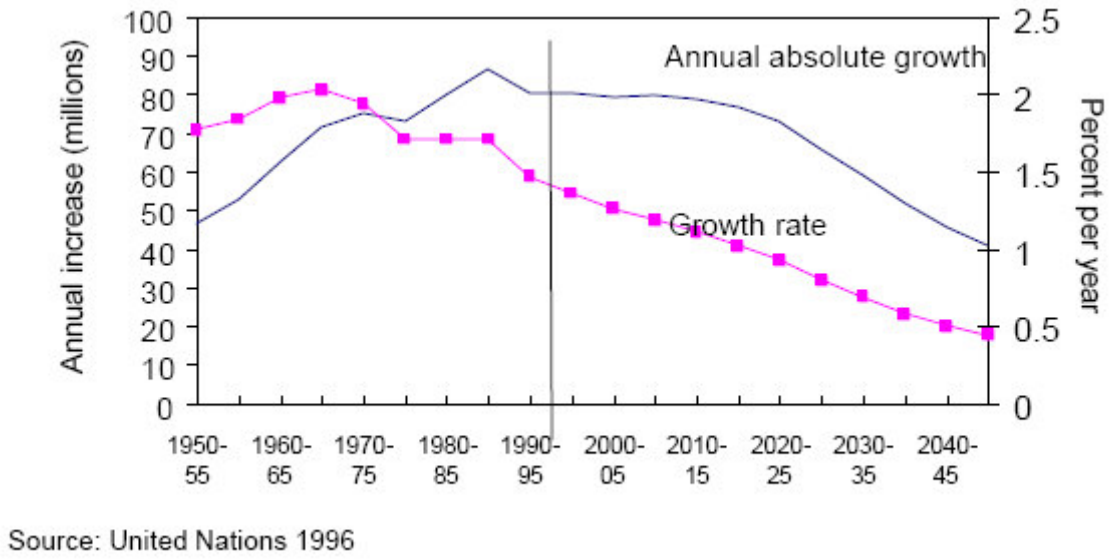
South will exceed those of the world as a whole because the North's population is projected to experience an absolute decline.

The trend in the world's annual growth rate (measured in percent per year) (see Figure 2-4) also rises and falls over the one-century period from 1950 to 2050. However, its peak occurred in the late 1960s, before the maximum in the annual absolute growth. Between the late 1960s and the late 1980s, the world's growth rate declined while absolute annual growth rose. These trends are consistent with each other because the growth rate is applied to a rapidly expanding population base to yield the annual increments. The growth rate of the South exceeds that of the world as a whole and that of the North throughout the period 1950 to 2050 *(Bongaart, 1997:2-3).*



Source: United Nations 1996

Figure 2-4: Total population by major region, estimates, (1950-1995) and projections (1995 to 2050)



Source: United Nations 1996

Figure 2-5: Annual absolute population growth and population growth rate for the world, estimated (1950-1995) and projected (1995-2050)

Projected population trends vary widely among world regions (see Table 2-3). In 1995, Asia had a population of 3.47 billion, more than half of the world total, and its population is expected to grow by more than half to 5.35 billion by 2050. Africa, with 0.72 billion inhabitants in 1995, is likely to experience by far the most rapid expansion, nearly tripling in size by 2050. Latin America, with 0.48 billion in 1995, was the smallest of the regions of the South; this is expected to continue with a growth pattern similar to Asia's. Trends for the two principal regions in the North are expected to diverge between 1995 and 2050: an increase from 0.30 to 0.38 billion in Northern America, but a decline from 0.73 to 0.64 billion in Europe. One consequence of the wide diversity of regional growth rates is that the regional distribution of population will shift significantly over time. While Asia's (60.9 percent) and Latin America's (8.4 percent) shares of the world total remain virtually unchanged, Europe's declines by half (from 12.8 to 6.8 percent) and Africa's rises (from 12.7 to 21.8 percent). Between 1995 and 2050, the North's share is expected to decline from 20.6 to 12.4 percent *(Bongaart, 1997:2-3).*

Table 2-3: Total population estimates (1950B1995) and projections (1995B2050), by region

	Population (billions)					Percent Distribution			Percent Increase	
	1950	1995	2000	2025	2050	1950	1995	2050	1950-1995	1995-2050
Africa	0.22	0.72	0.82	1.45	2.05	8.9	12.7	21.8	221	184
Asia[a]	1.32	3.47	3.57	4.68	5.35	56.0	60.9	58.6	145	58
Latin America	0.17	0.48	0.51	0.69	0.81	6.6	8.4	8.7	187	70
Europe	0.55	0.73	0.73	0.70	0.64	21.7	12.8	6.8	33	-12
Northern America	0.17	0.30	0.31	0.37	0.38	6.8	5.2	4.1	73	29
South	1.71	4.52	4.90	6.82	8.21	67.8	79.4	87.6	164	82
North	0.81	1.17	1.19	1.22	1.16	32.2	20.6	12.4	44	-0.8
World	2.52	5.69	6.09	8.04	9.37	100.0	100.0	100.0	125	65

[a] includes Oceania
Source: United Nations (1996)

In response to poverty and population growth, most donor agencies support targeted poverty programmes that give protection to the impoverished and vulnerable groups. In 1970's when there was global recession, the World Bank and the International Labour Organization did a research on labour based works. It started in the midst of global recession that was exacerbated by oil price increases of 1973 and only temporarily relieved by a short-lived commodity boom in 1974 (*Obidegwe, 1996).* The changing capital / labour price ratio, which has been increasing rapidly in the context of structural adjustment policies, lends new and unprecedented support to the argument for more labour based investment in both the public and private sector (*Von Braun, 1991).*

In this regard, the observed unemployment, underemployment and low returns to labour in Africa can be considered as immediate causes of poverty. Hence policies encouraging growth and employment creation are expected to be "essential for any poverty reduction strategy" (*World Bank 2000:99).* This view is supported by cross – country empirical evidence showing that expanding remunerative employment reduces the incidence of poverty *(Islam, 2004).*

Labour based technology (works) has extensively been utilized in delivery of poverty programmes because:

- provides an income transfer via wages to smooth consumption of poor households in the wake of a major shock such as economic crisis (including stabilization programmes or other reforms causing sharp rise in unemployment and poverty) or natural disaster (i.e. flood, drought, earthquake) or seasonal shortfalls in employment and income (i.e. drought season, or agricultural slack season in low income agrarian economies) (*Ravallion, 1990; Ninno, Subbarao and Milazzo 2009:4).*
- has a higher absorbency of unskilled labour *(Thwala, 2001).*
- is based on demand from community level and thus enhances democratic participation *(Thwala, 2001).*
- offers an attractive complement to a bundle of development instruments for poverty alleviation. *(Von Braun, 1991:6).* In Ethiopia, where food insecurity and poverty are widespread both in rural and urban areas, particularly in drought-prone districts, a potentially more effective way to reduce poverty has been recently used. In Bangladesh, the Rural Maintenance Programme (RMP) and the food for assets of World Food Programme (WFP) select the beneficiaries using poverty criteria and then try to retain them for longer period of time (*Ninno, Subbarao and Milazzo 2009:6).*
- creates assets in poor rural areas where infrastructure is poorly provided for *(van Braun, 1991:2).* In Madagascar, the works performed mainly involve the reconstruction and/or repair of damaged basic infrastructure (roads, irrigation canals, small dams, bridges), and clean up of canals and routes following natural disasters. In Yemen, public works projects respond to the immense need for access to infrastructure for basic social services such as schools, roads, health, and other sectors, intended to serve the poor and deprived communities especially in remote rural areas (*Ninno, Subbarao and Milazzo 2009:9).*

- provides training for small scale contractors and transfer of technology to the rural communities *(Niraula, AB 9, 1999:13). C*ross-country experience in training of communities is rather limited. A few programmes have training components to direct women towards self-employment. In Bangladesh, the Rural Maintenance Programme

(RMP) requires the women participating into the program to attend income generating and skills training. In addition, they must save part of their wage on a regular basis (participants are paid a wage of 51 Taka per day with a forced savings of 10 Taka). *Jefes* program in Argentina included an *option* for participants to work or participate in training or education activities for 4–6 hours a day (no less than 20 hours a week) in exchange for the payment. The Extended Public Works Programme (EPWP) in South Africa provide training opportunities beyond the skills acquired on the job to prepare participants for possible longer-term employment, self-employment, or further education or training (*Ninno, Subbarao and Milazzo 2009:8).* Training for labour based contractors is ongoing or planned in Kenya, Ghana, Tanzania, Uganda, Madagascar, Zambia and Sierra Leone *(Nilsson, AB 2, 1993:1)*

- According to *Ninno, Subbarao and Milazzo (2009)* in addition to the above mentioned relatively well-known areas of public works activity, there have been some recent attempts to use public works in the wake of newly emerging crises, e.g., in response to HIV-AIDS crisis, in urban settings, in fragile states, and in preventing climate-change associated risks. Creative ways have been devised to make effective use of public works programmes in response to the challenge of HIV/AIDS in Southern and Eastern Africa. In this case the types of work performed include the support for social infrastructures in areas affected by high prevalence of HIV/AIDS such as providing Home Based Care (HBC), or Early Childhood Care and Development (ECCD) are responses to such a situation, with examples being the Red Cross's Home Based Care Programmes in Zimbabwe and Malawi, and the Working for Water ECD programme in South Africa *(McCord, 2005).*

Any Government intervention to combat poverty and inequality, such as the Public works Programmes, needs to be assessed against the backdrop of the vicious cycle of inequality, poverty and underdevelopment *(Burkey, 1993:11 – 15 and Chambers, 1997:162 - 163). Todaro (1991:244)* makes a case for linkages among unemployment, poverty and income distribution. The poor are also more vulnerable to employment and income risks, especially since agriculture, which is the principal source of income, is strongly covariate with low and variable rainfall. Most other income sources are positively and closely linked to agriculture and hence total

household income is highly variable (Lucas *and Stark, 1985; Valentine, 1993*). The exceptions are income transfers and wage income from public works which often move counter to agriculture and related incomes *(Teklu and Asefa, 1999:433).*

2.4 The Management Process of Labour Based Works

Within different institutional and organizational frameworks, a wide range of techniques of labour based construction and maintenance have been extensively tried and tested for the past 30 years. The search for suitable management process started mid-1980s, when practitioners noted numerous challenges with the process approach. *McCutcheon (2008:28)* considers it essential that the construction and maintenance of public works should take account of the *process* as well as the product. Recent review suggests availability of numerous types of labour based works. *Mujeri (2002: 45)* notes that different operational issues are involved in planning and implementation of different types of rural infrastructure programmes. Consequently, many management processes may have been adopted as well. This subsection provides a brief illustration of the existing work in types, management process, challenges and reviews made to the processes of labour based works.

2.4.1 Types of civil works

According to *Elisabeth and de Veen, (1996:1)*, Civil works programmes that deliberately use unskilled labour fall into four major categories.

a) *Relief programmes*, which respond to emergencies created by natural or man-made catastrophes. Their objective is to provide income to the workforce; any assets created are of secondary importance.
b) *Self-help programmes*, in which the government appeals to communities to help themselves rather than pay community labourers. These programmes are a form of regressive taxation.
c) *Employment-generation programmes*, which attempt to assuage political unrest by providing jobs. Their objective is to keep people busy rather than to improve productivity.
d) *Asset generation programmes*, which supplement beneficiaries' usual incomes by employing them in projects that improve infrastructure facilities at the lowest possible cost. In these programmes labourers are paid.

In 2003, Majeres *(AB 15, 2003:3)* concluded that a recent assessment of the main methods for delivering public works programmes confirmed of two types of labour based construction techniques.

(a) labour based construction techniques, *i.e.* techniques that *optimise* labour inputs while ensuring good quality and cost effective production of economic and social assets,

(b) Labour-intensive techniques that seek to *maximize* labour with a view to establish social safety nets that have the widest possible coverage.

Both approaches have an impact on poverty: the latter is purely short-term, with immediate impact on poverty alleviation but having little effect on sustainability or capacity-building; whereas the former has a more sustained impact, with a longer-term and structural effect on employment creation and poverty reduction through the substitution of capital by labour within mainstream public investment programmes . These conclusions were further supported by the findings of case studies on India and Bangladesh.

This study reviews civil works programmes of category (d) of *Elisabeth and Jan de Veen* and category (a) of *Majeres* specifically those that generate social assets of good quality with cost effective production methods using labour-based technology. The other types might just be referred to whenever better practices have been reported and are applicable to the subject matter under discussion.

The literature employs various terms to describe works that create infrastructure which is built with local resources and which generate remunerated activities for numerous workers. This kind of work is most frequently referred to as labour intensive or labour based works but it also falls under heading of Special Public Works Programmes (SPWP); in conjunction with the programmes linked to the social dimension of adjustment (SDA), these have been called Works Public Interest for Employment in Niger and more recently are also being called Employment – Intensive (EI) (*Bentall, 1999: 219)* works. *Devereux and Solomon (2006:10)* called them labour based infrastructure programmes (LBIPs).

2.4.2 Existing Management Process Approaches

The literature has three identifiable process approaches to program implementation. The early proposals were made by International Bank for Reconstruction and Development (IBRD) and Gaude and got revised in 1995 by McCutcheon.

2.4.2.1 Gaude (1987) Process Approach

Gaude (1987) therefore suggest a staggered approach: at least one year should be spent at the outset on in-depth design studies for simple institutional structures, on identifying and working with intended beneficiaries, and on carrying out small – scale trials. During a three – year initial phase, Special Public Works Programmes (SPWPs) might concentrate on direct impact for the target group. After this period, an enlarged phase devoted to develop human and organization resources for sustaining the programme at local levels, and institutional and technical resources for sustaining it at the national level, should begin. Included in this phase would be promotion and supervision of public works programmes in this context of normal public investment programmes.

2.4.2.2 IBRD Process Approach

IBRD came up with a three phased approach implementation strategy as a construction process.

Phase 1: Orientation

This phase involves the orientation and education of all the parties on the policy objectives, types of projects, methods of construction, conditions of employment and the concepts and principles of labour intensive work.

Phase 2: Preparatory work

This entails the detailed analysis, design, planning and documentation. In particular, the aspects determined here include institutional framework (local and national), organization for work, funding and staff recruitment policy. Specifications and training materials are prepared as well as conducting community briefings and selection of trainees.

Phase 3: Piloting

During this phase demonstration projects and embryonic training programmes are implemented and expanded into national programmes.

The expansion of programmes is only allowed to proceed at the rate at which: the programme can produce trained personnel, Local and national institutions and the communities have the capacity to absorb the trained personnel and be able to maintain their roles in the programme.

The phased approach to a programme ensures the requisite individual development and institution building at all levels. The approach must be located in an appropriate institutional framework identified early in the process. For countries without prior experience a three-year time period is recommended for the lead-in phases (1-3). During the lead – in – phases the overheads are high but they revert to normal ratios once the institution has been built.

2.4.2.3 McCutcheon Process Approach

The four-phased approach, outlined below, is the result of many years of experience and analysis by *McCutcheon (1995:349 – 350 or 2008:24-26).* In order for greater success to be achieved in the long run a four phased approach should be adopted for labour based works National Programmes.

- Orientation at senior policy making and programme management level
- Preparatory Phase: Analysis and Design
- Demonstration/Initial Training

The above approach has to be located within an institutional framework: national, regional, local. A "lead-in" time is necessary. During this lead-in period phases 1 and 2 are carried out. The components of the different phases are listed below.

Phase One

Education and agreement at national regional and local levels as to:

(i) Concepts and Objectives: asset creation plus significant additional employment opportunities per unit of expenditure;

(ii) Nature of long-term "programmes";

(iii) Conditions of employment, wages and linking of payment to production.

Brief local and national authorities as to type, standard, funding and method of construction; the importance of training, institution (local and national), long-term political and financial commitment. Agreement that labour intensive public works programmes are not emergency or drought relief projects.

Draft long-term objectives for the programme.

Phase Two

Analysis: institution (local and national); organization; levels of funding; specific technical analyses; criteria for staff recruitment; identification of initial communities and training sites.

Preparatory Work: design, specification, documentation; administrative, technical and training manuals; selection of trainees; briefing of communities; priorities.

Revise work plans.

Phase Three

Orientation and training of trainers; start pilot projects and embryonic training programmes; revise training and national programmes; revise manuals and reporting systems prior to initiation of large-scale national programmes.

Phase Four

Expand initial training programmes within each sub-sector into national programmes.

But the expansion should only be allowed to proceed in the following manner:

(i) at the rate at which the training programme can produce skilled site supervisors and managers (training must pay as much attention to character as technical competence);

(ii) to the degree to which local communities have the capacity to absorb the trained personnel;

(iii) to the degree to which the national institution is able to absorb the trained management personnel and maintain its overall planning, co-ordination, monitoring and evaluation role.

Through the 'programme' approach (as opposed to 'project') the institution is established together with the human resources required to implement the work from site level through to national planning and co-ordination.

2.4.3 Current Challenges of Labour Based Works

Labour intensive works have had several inherent construction problems. The problems include:

2.4.3.1 Scope of works

Employment intensive technology has a few difficulties which need to be resolved. One of the difficulties was postulated by De *Jong (1995)* on scope of work. Labour is less suitable for long distance haulage, compaction, surfacing of roads, mixing, stabilization, high quality pre-mix and production of certain aggregate grading, high strength concrete *(Thwala, 2001).* Not all activities can be done by labour intensive works. The applicability of equipment in construction has certain advantages. The results of employment intensive works are dependent upon numerous factors. The quality of employment based work can be comparable to equipment work, providing that appropriate management systems are established.

2.4.3.2 Requires high level of supervision, organisation and management systems

Employing labour-based methods haphazardly will not make them competitive with equipment-based methods. This variation is primarily caused by differences in organization and management, such as the use of incentive schemes, and in the design and quality of hand tools and complementary light equipment (*Elisabeth and de Veen, 1996:16).* In one study, better supervision was associated with substantial increases in labour productivity *(Scott Wilson Kirkpatrick 1991).* These Labour intensive public works require an extensive and solid network of institutions at the local level, with the technical and operational capacity to choose the works to be done, to organize the production process, and to channel resources to the needy poor *(Márquez 1999: 14).* As a general rule, labour based infrastructure programmes (LBIPs) have heavier institutional requirements. LBIPs need close interaction and collaboration between central government and local government institutions, with some design and management aspects being centralized and others decentralized. LBIPs also require complex cooperative relationships between different government ministries and agencies (*Devereux and Solomon, 2006:10).*

2.4.3.3 Record keeping

Muatjetjeja, 2006 having reviewed 6 programmes of labour intensive works in Botswana, only one programme (the Botswana Labour Intensive District Roads Programme (LG 34)) had been successful in terms of both internal and external evaluations. Furthermore there was more complete documentation for the LG 34 than for all the other programs. Out of the six programs, only one had complete documents available. These variations and problems were also noted by *McCutcheon (1989:117)* when comparing the Kenya Rural Access Roads Programme and Botswana labour based programme. As to reporting, in Kenya the system was set up to control every aspect of site construction. It was also used to collect data to modify estimates of labour productivities and to provide comparison with equipment: over the years, both the detail and the amount of data collected were too great for the control of a large national programme. In Botswana the reporting system was not set up to control site work to anywhere near the extent of the Kenyan system. Far less data was collected and the data fed more easily into a national system.

2.4.3.4 Time

Labour intensive works have low productivity rates and hence appear to be slow. It therefore requires a lot of time to complete. Theoretically, one could deploy enough labour on a project to finish it in the same time that equipment based methods would require. Practically, however, when using labour-based methods, the completion time is constrained by the availability of labour and the size of the works *(Stock and de Veen 1996:9).*

2.4.3.5 Motivated labour

Motivated labour is not available everywhere in sufficient numbers and where available it competes with other rural development and agricultural activities. The willingness of labour to work in civil construction depends on: earning differentials relative to alternative employment; the wealth of the individual (such as the extent of landholdings); any additional work-related costs of food, housing, and transport; the disutility of work in terms of leisure forgone; the method of payment (that is, check or food); and the regularity of payment *(Stock and de Veen, 1996:9).*

2.4.3.6 Lack of programme evaluations

There have been *few available evaluations* made which, though, when properly designed public works have been able to reach poorer households. The reasons for the lack of evaluations vary from temporary nature of the programmes, to the difficulty of defining the objectives of the evaluation and difficulty of collecting data *(Ninno, Subbarrao and Milazzo, 2009:47 & 51).* This was evident during a recent assessment of the South African Targeted Procurement (TP) system. In the absence of a suitable monitoring and evaluation mechanism, the effectiveness of TP as an instrument of social policy was hard to judge *(Manchindi and Harmond, 2002).*

2.4.3.7 Inadequate planning

According to *McCutcheon (1995:120)*, labour based works should not be treated as 'make-work' – emergency, drought-relief, alternative-to-dole queue schemes. Nor should they lose sight of their employment creation potential. As proper engineering projects they should be accorded the necessary forward planning which is part of other engineering work. Given the national planning dimension of this work and its innovative nature (in the modern world) these engineering projects should be set within long-term perspectives particularly with regard to government commitment, finance and technical assistance.

2.4.4 Process Approach Reviews

Bezu and Holden (2003:2) argued that dozens of studies have been undertaken about workfare programmes in general and Food-for-Work in particular. The majority of these studies explore in detail efficiency in targeting the poor *(Dev 1995, von Braun 1995, Webb and Kumar 1995, Subbarao 1997, Ravallion 1999, Clay. 1999, Gebremedhin and Swinton, 2001, Jayne, 2002, Barrett and Clay, 2003 and Hagos 2003);* the production disincentive effect *(Abdulai , 2004, Fitzpatrick and Strong 1988 and Maxwell, 1994)* and the cash versus food debate (*Clay 1986, Faminow 1995, Dorosh and Haggblade 1997 and Arndt and Tarp 2001).*

Devereux and Solomon, (2006) reviewed the experience of employment creation programmes with a focused attention on issues relating to the design, funding and implementation of the

programmes, their impact on production, asset creation and the labour market, the sustainability of poverty reduction through such programmes, and gender considerations.

Subbarao, (2003) explored the key design features accounting for programme success, the effectiveness (or lack thereof) of the programme under diverse country conditions, and the required programme-specific systems of monitoring and evaluation to assess the effectiveness. In 2009, *Ninno, Subbarrao and Milazzo* reviewed current debates about basic design choices (such as targeting), prerequisites for effective implementation (e.g. institutional capacity) and available evidence on various kinds of impacts (e.g. on poverty). Specifically, the research focused on the review of international experience: impacts of employment creation programmes on agricultural production, labour markets, asset creation, and sustainable poverty reduction; as well as funding, design and implementation issues. The paper also considered gender aspects (such as impacts on women's participation rates). The paper considered both employment-based safety nets and labour-based infrastructure programmes, particularly those with a pro-poor orientation.

Stock and de Veen (1996), based upon extensive field work in Sub-Saharan Africa and a review of previous experience, identifies the key reforms and interventions that can facilitate the expansion of labour based methods in the road sector. These included increased government commitment, effective labour laws, appropriate design standards, training, a reliable flow of funds, and a decentralized administrative structure.

2.5 Framework Approach to Managing Labour Based Works

The review of literature suggests that the research in management processes is less conclusive and there is a major scope for further work, therefore the main focus of this research. The group of researchers by *Bezu and Holden (2003:2), Devereux and Solomon, (2006)* and *Ninno, Subbarrao and Milazzo* and *Stock and de Veen (1996)* considered the social aspects (issues which affect the intended beneficiaries but still more much emphasize is put on the implementation and / construction stage) of labour based works. There exists a gap on management processes which are continuous, coherent and can be applied consistently; considering the whole project view and also viewing engineering construction projects

holistically as part of other engineering work (*McCutcheon 1995:120).* Using the most recent programme specific secondary data and in small proportion primary data on a range of countries which have been involved with labour based infrastructure programmes, the study aims at identifying the management processes; experiences and practices in improving the management processes of labour based works in the interest of promoting team work and integrated processes of labour based works.

According to *Kagioglou, (1998)* "taking the process from contractor's point of view, you will end up with a process which does not refer the front end business issues of the client. Furthermore, if a process is formed based on the architect's point of view then you end up with a different process". Thus, in construction projects, construction itself is often considered synonymous with the project process. Right from the start of the project the tendency is to accelerate the whole process to the construction stage *(Kagioglou, 2000).*

This view is propounded in the process approaches and process reviews above and *Mc Cutcheon's (2008)* basic principles of labour based works for successful site implementation. The issues are pertaining to implementation and / or construction stage of the process. This emphasizes that process models have been an effective way to show how a process works *(Rosenau, 1996).*Process modelling assures improvement in process performance *(Soares and Anderson, 1997)* and such modelled construction process can easily be automated *(Shirazi, 1996).* It is particularly useful for understanding points of review, identifying critical information flow and data relationships. Its fundamental concept relies on transforming inputs to outputs. Process modelling breaks down complicated and complex phases into readily identifiable processes for ease of understanding.

Turk and Lundgren (1999) and Chavrat (2004) argue that a process framework:

- supports for construction process re-engineering
- supports model-based construction process/project design, planning and management,
- supports quality systems development,
- supports construction IT appraisal and management;
- provides a roadmap for applying tools and techniques,
- easy to understand and simple to use and
- captures and presents best practices.

Labour based construction projects are mostly in small packages of different types e.g. roads, bridges, irrigation schemes and are also dispersed over rural areas in a country. This complexity also often leads to specialization among the various disciplines and so to a possible breakdown in communication (*Ahuja 1976).* Because of this complexity, there is a need to model construction processes from many points of view. The importance of visualizing the operations involved in a construction project and of facilitating communication has been recognized (*Ahuja 1976).* Moreover, *Curtis*. (*1992)* add that the purposes of modelling are also to facilitate human understanding, and to support process improvement and process management.

According to *Hughes (1991),* every project goes through similar steps in its evolution in terms of stages of work. The stages vary in their intensity or importance depending upon the project. The identification of those steps is very important as they define the genericity of the model that is created *(Kagioglou, Aouad and Cooper, 1998).* To identify the management processes for labour based works, a process mapping tool is to be identified within the construction industry. As the aim is to represent the whole life of a project, the *Process Protocol* is considered to be a suit as an assessment tool.

2.6 The Process Protocol

Process Protocol is one of the emerging standard process models in construction. Process Protocol Model resulted from a research by (*Kagioglou, 1998b*) and is presented at Appendix 1. A detailed description of the Process Protocol model can be found in *Kagioglou (1998c).* The Generic Design and Construction Process Protocol (GDCPP) was developed by the University of Salford in 1998 in an attempt to improve the challenges faced by the construction industry. The Egan Report, Rethinking Construction *(Egan, 1998),* stated that the industry also suffers from low and unreliable profitability, insufficient research & development, and a lack of customer focus. Moreover, these problems typically relate to the industry's adversarial nature, and a *profound co-ordination and communication system* between the parties was much needed. A *'stage-gate'* approach found in manufacturing processes *(Cooper, 1994)* applies a consistent planning and review procedure throughout the process. This approach was adopted in the Process Protocol and it is presented in terms of 'hard' and 'soft' or 'fuzzy' gates. Hard gates illustrate the need for completing all necessary phase activities before proceeding to the next phase. Soft gates allow concurrency of phase activities without jeopardising the overall project success.

This section provides a brief review of the principles, elements and advantages of the Process Protocol *(refer http:/www.processprotocol.com)* as a diagnostic instrument for documenting / evaluating a series of steps, procedures and documentation that has been used to bring about the successful completion of labour based works programs. It sets the mapping process of the research.

2.6.1 The Process Protocol Principles

Six key principles (see Table 2-4) were considered as the basis for an improved construction process. The six principles are whole project view, a consistent approach, progressive design fixity, co-ordination, stakeholder involvement, teamwork and feedback.

Table 2-4: Process Protocol principles

Whole Project View	The process of design and construction has to cover the whole 'life' of the project from recognition of a need to the operation and maintenance of the finished facility. This approach ensures that all the issues are considered from both a business and a technical point of view as well as ensuring informed decision making at the 'front-end' of the design and construction development process.
Progressive Design Fixity	Drawing from the 'stage-gate' approach in manufacturing new product development (NPD) processes, the Process Protocol adopts a Phase Review Process which applies a consistent planning and review procedure throughout the project. The benefit of this approach is fundamentally the progressive fixing of design information throughout the Process, allowing for increased predictability of construction works.
A Consistent Process	The generic properties of the Process Protocol allow a consistent application of the Phase Review Process irrespective of the project in hand. This together with the adoption of a standard approach to performance measurement, evaluation and control, will facilitate the process of continual improvement in design and construction.
Stakeholder Involvement / Teamwork	Project success relies upon the right people having the right information at the right time. The pro-active resourcing of Phases through the adoption of a 'stakeholder' view should ensure that appropriate participants (from each of the key functions) are consulted earlier in the Process than is traditionally the case. Furthermore, the correct identification and prioritisation of the Stakeholders and their needs should enable effective decision making throughout the project lifecycle.
Co-ordination	The need for effective co-ordination between the project team members is paramount. Appointed by the client, Process Management will be delegated authority to co-ordinate the participants and activities of each phase, throughout the process. With a focus on the design and construction process, Process Management ensures the correct application of the Process Protocol to the project in hand.
Feedback	Success and failure can offer important lessons for the future. The Phase Review Process facilitates a means by which project experiences can be recorded, updated and used throughout the Process, thereby informing later Phases and future projects. The creation, maintenance and use of a Legacy Archive will aid a process of Continual Improvement in design and construction.

2.6.2 The Process Protocol Elements

The process Protocol elements are:

- Activity Zones
- The Phases
- The Legacy archive
- The Phase review
- The Deliverables

2.6.2.1 The Activity Zones

The activity zones, as described in Table 2-5, consist of:

- Development Management,
- Project Management,
- Resource Management,
- Design Management,
- Production Management,
- Facilities Management,
- Health and Safety, Statutory and Legal Management,
- and Process Management.

The Activity Zones contain high-level processes spanning the duration of a project from inception, through design and construction, and including operation and maintenance. The Activity Zones are multi-functional and consists of a network of disciplines to enact specific task of the project, allowing the 'product' to drive the process rather than the function as in a sequential approach. *Luck and Newcombe (1996)* argue that traditional roles and responsibilities change from project to project, often resulting in ambiguity and confusion; the use of zones potentially reduces this confusion and enhances communication and co-ordination *(Cooper, 1998).*

Table 2-5: Process Protocol activity zones

Development Management	Development Management is responsible for creating and maintaining business focus throughout the project, which satisfies both relevant organizational and stakeholder objectives and constraints. For example, a proposed speculative office development needs to satisfy the developers objectives (say, return on capital) and constraints (say, available finance), as well as fulfilling other stakeholder considerations (say, compliance with prevailing planning concerns). The Development Management activity zone is likely to include the following parties: ▪ Senior client representation ▪ Suppliers of finance to the client ▪ Professional advisors (Obviously the supply of finance and professional advice can originate from both in-house and from outside the client organization).
Project Management	Project Management is responsible for effectively and efficiently implementing the project to agreed performance measures, in close collaboration with Process Management. Performance criteria are ultimately based on requirements set out in the business case and project brief. Project Management is an agent of the Development Management activity zone. Project Management is ultimately responsible for preparing the project execution plan and ensuring that all relevant inputs from other activity zones are guided and integrated towards the successful implementation of the project. The Project Management activity zone is likely to consist of project management professionals.
Resource Management	Resource Management is responsible for the planning, co-ordination, procurement and monitoring of all financial, human and material resources. (Development Management establishes the overall budget). The Resources Management activity zone is likely to include the following parties: ▪ Quantity surveying – which will define plant and material needs and monitor their cost. ▪ Buying – which will procure plant and materials defined by the Quantity Surveying? ▪ Project management - which will define human resource requirements. ▪ Human resources – which will procure human resources defined by Project Management
Design Management	Design Management is responsible for the design process which translates the business case and project brief into an appropriate product definition. It guides and integrates all design input from other activity zones. The Design Management activity zone is likely to include the following parties: ▪ Design professionals

	▪ Suppliers of materials / components ▪ Main contractor and subcontractors and representatives from: o Production Management activity zone o Facilities Management activity zone o Development Management activity zone o Project Management activity zone o Health & Safety, Statutory and Legal Management
Production Management	Production management is responsible for ensuring the optimal solution for the buildability of the design, the construction logistics and organization for delivery of the product. The Production Management activity zone is likely to include the following parties: ▪ Suppliers ▪ Main contractor and subcontractors and representatives from: o Design Management activity zone o Project Management activity zone o Health & Safety, Statutory and Legal Management
Facilities Management	Facilities management is responsible for ensuring the cost efficient management of assets and the creation of an environment that strongly supports the primary objectives of the building owner and/or user. The Facilities Management activity zone is likely to include the following parties: ▪ Facilities management professionals ▪ Building maintenance professionals ▪ Building services professionals and representatives from: o Design Management activity zone
Health and Safety, Statutory and Legal Management	Health & Safety, Statutory and Legal Management is responsible for the identification, consideration and management of all regulatory, statutory and environmental aspects of the project. The Health & Safety, Statutory and Legal Management activity zone is likely to include the following parties: ▪ Development Management activity zone ▪ Design Management activity zone

	▪ Production Management activity zone ▪ Facilities Management activity zone ▪ Project Management activity zone ▪ Change Management activity zone ▪ Main contractor and subcontractors ▪ Suppliers ▪ Resources Management activity zone
Process Management	Process Management develops and operationalises the Process Protocol and is responsible for planning and monitoring each phase. Process Management is an agent of the Development Management activity zone. Responsibilities include: ▪ Formulating the process execution plan, in close collaboration with Project Management. ▪ Review the phase review plan(s) and reports. ▪ Determine and examine the inputs and outputs of the process in terms of the deliverables at each phase. ▪ Offer expert recommendations to the Development Management activity zone with regards to the satisfactory execution of the process for delivery of the product. ▪ The Process Management activity zone should consist of construction professionals.
Change Management	Change management is responsible for effectively communicating project changes to all relevant activity zones and the development and operation of the legacy archive. Responsibilities include: ▪ Receiving and structuring change information ▪ Distributing appropriate change information to relevant activity zones in an accurate and timely fashion ▪ Retrieve and distribute appropriate legacy archive information to relevant activity zones ▪ Review, and where appropriate, modify and/or update the legacy archive

2.6.2.2 The Phases

The Process Protocol consists of 10 phases. The description of the various phases identifies the following areas:

- Before the phase
- During the phase
- Deliverables of the phase
- Goals of the phase
- Status of the gate at the end of the phase

The guidelines/descriptions do not attempt to provide a complete set of documents that might be encountered in a project but wherever applicable, the deliverables presented should enable the decision making process and reduce risks.

2.6.2.2.1 Phase Zero- Demonstrating the Need

'What is the Problem?' It is important to establish and demonstrate the client's business needs and ensure problems are defined in detail. Identifying the key stakeholders and their requirements will enable the development of the Business Case as part of the client's overall business objectives.

Before the Phase

- The 'user' i.e. business, customer is communicating the problem to the client
- A master plan (of the client's strategic issues) should be available

During the Phase

- Bring together the business case, facilities management (clients and users)
- Carry out the necessary activities to produce the deliverables

Deliverables

- *Stakeholder List (initial):* Identify and prioritise the relevant stakeholders
- *Statement of Need (initial):* The need/opportunity should be validated and recommendations made
- *Business Case (initial):* Associated costs, options, risks and benefits to the need. Short term solutions should be offered
- *Project Execution Plan (initial):* Indicate how the project might progress

- *Process Execution Plan (initial):* Make plans for managing the project according to the Process Protocol

Goals

- Establish the need for a project to satisfy the client's business requirements
- Gain approval to proceed to Phase 1

Gate Status

- 'Soft' gate

Note: A 'stakeholder' is defined as: 'any person or group who has an interest in the provision or use of the required product.'

2.6.2.2.2 Phase One - Conception of Need

'What are the options and how will they be addressed?' The initial statement of need becomes increasingly defined and developed into a structured brief. To this end, all the project stakeholders need to be identified and their requirements captured. Based on those, the purpose of this phase is to answer the question "What are the options and how will they be addressed?"

Before the Phase

- Approval to proceed obtained
- Approval for funding obtained (probably up to phase 3 depending on the size of the project)
- Results of studies to define need(s) are available
- Initial stakeholders are identified

During the Phase

- Identify and refine the statement of need(s)
- Develop the project brief according to the business case developed in phase 0
- Update stakeholder list/group membership
- Identify options i.e. do nothing, manage the problem, develop a solution

Deliverables

- *Stakeholder list (finalized):* All the key stakeholders should be identified by this stage. If at a later stage in the project other stakeholders need to be included, their impact on the project should be carefully analysed

- *Statement of need (finalized):* The need should be clearly understood so that potential solutions and feasibility studies can be examined
- *Project brief (initial):* The scope of the project should be clearly defined
- *Business Case (updated):* Analyses based on potential solutions identified in the project brief
- *Design Brief:* Preliminary information on potential solutions to the problem(s)
- *Project Execution Plan (updated):* Plan for feasibility through to phase 3
- *Process Execution Plan (updated):* Plan phase review until phase 3

Goals

- Identify potential solutions to the need and plan for feasibility (phase two)
- Gain authority and financial approval to proceed to phase 2

Gate Status

- 'Soft' gate

2.6.2.2.3 Phase Two - Outline Feasibility

'Which option(s) should we consider further?' Many options could be presented as possible solutions to the identified problem. The purpose of this phase is to examine the feasibility of the project and narrow down the solutions that should be considered further. These solutions should offer the best match with the client's objectives and business needs.

Before the Phase

- Facilitate for the introduction of new project participants
- Appoint the 'core teams' that will form the activity zones

During the Phase

- Undertake feasibility studies for all options including necessary planning approvals
- Revise Business Case

Deliverables

- *Project brief (revised):* Based on feasibility studies results
- *Business case (updated):*Based on a better understanding of the options after their feasibility has been examined
- *Project execution plan (updated):* Include recommended options

- *Process execution plan (updated):* Consider recommended options
- *Performance management report (initial):* Project success criteria and performance measures for phase 3

Goals

- Examine the feasibility of the options presented in phase 1 and decide which ones should be considered for substantive feasibility
- Gain approval to proceed to phase 3 (Substantive feasibility study and outline financial authority)

Gate Status

- 'Soft' gate

2.6.2.2.4 Phase Three - Substantive Feasibility Study & Outline Financial Authority

'Should the proposed solution(s) be financed for development?' The decision to develop a solution or solutions further will need to be informed by the results of the substantive feasibility study or studies. The purpose of this phase is to finance the 'right' solution for concept design development and outline planning approval.

Before the Phase

- Re-define the project brief / business case and project objectives based on outline feasibility results
- As the options become more defined, consider project success criteria and performance measures

During the phase

- Challenge the need(s)/opportunities
- Conduct substantive cost/benefit analyses
- Submit application(s) for statutory approval(s)
- Produce the concept design plan

Deliverables

- *Project brief (updated):*Based on outline feasibility results
- *Business case (updated):* Based on outline feasibility results
- *Procurement plan (initial):* Identify and procure key suppliers; Special needs analyses; Facilitate for increased team membership

- *Concept design plan:* Based on substantive feasibility results plan for the concept design; Define key systems and criteria for design evaluation; Identify of systems interfaces; Map the concept design process execution
- *Construction, Design and Management (CDM) assessment (initial):* Based on the solution(s) identified at this phase
- *Project execution plan (revised):* Identify significant work items; Identify resources and duration needs for the conceptual design phase(s)
- *Process execution plan (revised):* Identify phase review times for the conceptual phases of the project; Deliverables for the next phase(s)
- *Information Technology (IT) communications strategy (initial):* Make plans for effective and compatible means of communications for team members
- *Performance management report (update):* Performance measures for the next phase (perhaps until phase 5)

Goals

- Gain approval to proceed to phase 4
- Gain financial approval (perhaps until phase 5)

Gate Status

- 'Hard' gate

2.6.2.2.5 Phase Four - Outline Conceptual Design

'How does the solution translate to an outline design? The purpose of this phase is to translate the chosen option into an outline design solution according to the project brief. A number of potential design solutions are identified and presented for selection. Some of the major design elements should be identified.

Before the Phase

- Define the systems i.e. sub-assemblies
- Define the criteria for evaluating the systems e.g. production time scale, cost, resources required, etc.
- Identify major system interfaces and interactions to enable communications and facilitate the introduction of project design teams
- Facilitate the introduction of key system suppliers

During the Phase

- Iterative development of outline concept design
- Refine project / system solutions
- Develop basic schematics i.e. plans, elevations, etc.
- Identify the implications of system solutions in relation to other system solutions and to the overall project
- Identify production supply chain

Deliverables

- *Project brief (revised):* Enhanced to enable full concept design in phase 5
- *Business case (revised):* Based on the revised project brief
- *Outline concept design:* Major assumptions defined
- *Project execution plan (revised):* Based on more defined system solutions; Program i.e. Gantt chart; Quality plan
- *Cost plan (initial):* Based on system solutions and key supplier selection
- Procurement plan (updated): Key suppliers for system solutions; Product supply chain
- *CDM assessment (revised):* Based on site and environmental revisions
- *Process execution plan (revised) :* Deliverables for the next phase and outline deliverables for the rest of the project
- *Communications strategy (revised):* Based on key suppliers being procured; Facilitate increased membership
- *Performance management report (updated);* Through to the end of phase 5

Goals

- Identify major design elements based on the options presented
- Gain approval to proceed to phase 5

Gate Status

- 'Soft' gate

2.6.2.2.6 Phase Five - Full Conceptual Design

'Can we apply for planning permission?' The conceptual design should present the chosen solution in more detailed form to include Monitoring and Evaluation (M&E), architecture, etc. A number of buildability and design studies might be produced to prepare the design for detailed planning approval.

Before the Phase

- Review membership of design teams
- Review evaluation criteria for concept design
- Some of the major systems are identified

During the Phase

- Develop system concept design
- System interface studies
- Identify resourcing requirements

Deliverables

- *Project brief (updated):* Enable co-ordinate design in phase 6
- *Business Case (updated):* Based on the updated project brief
- *Procurement plan (updated):* Review membership of the design team; Sourcing plan considering work packaging; Preliminary equipment requirements for construction
- *Full concept design;* Major design elements and recommendations made identifying key assumptions; Architecturally detailed to allow submission for detailed planning approval; Enable validation of functional attributes
- *Cost plan (updated):* Based on full concept design
- *Maintenance plan (initial):* Maintenance needs for the full concept design; Preliminary budgetary requirements; Special considerations
- *CDM assessment (updated):* Pre-tender health and safety plan
- *Project execution plan (updated):* Based on full concept design
- *Process execution plan (updated):* Based on full concept design
- *IT communications strategy (updated):* Facilitate increased design team membership
- *Performance management report (updated):* Productivity, duration and budgetary measures for phase six and possibly through to the end of phase 8

Goals

- Conceptual design and all deliverables ready for detailed planning approval
- Gain approval to proceed to phase 6

Gate status

- 'Hard' gate

2.6.2.2.7 Phase Six - Coordinated Design, Procurement & Full Financial Authority

The purpose of this phase is to ensure the co-ordination of the design information. The detailed information provided should enable the predictability of cost, design, production and maintenance issues amongst others. Full financial authority will ensure the enactment of production and construction works.

Before the Phase

- Review membership of design teams
- Review evaluation criteria for co-ordinated design
- Major building elements are fixed

During the Phase

- Assemble the co-ordinated product model
- Review and update major deliverables
- Review supply chain analysis

Deliverables

- *Project brief (updated):* Changes made to facilitate co-ordinated design
- *Business case (updated):* Based on changes made in the project brief
- *Procurement plan (updated):* Based on reviewed membership of the design team and suppliers
- *Product model:* Major design elements of the single solution have been defined and agreed to allow co-ordinated design; Work packages defined
- *Cost plan (updated):* Based on detailed design elements; Value engineering report for design considerations
- *Maintenance plan (updated):* Accommodate major design solutions and detailed design solution

- *CDM assessment (updated):* Health and safety plan based on detailed design solutions
- *Communications strategy (update):* In addition to IT communications strategy, consider the membership of all teams in terms of communications
- *Project execution plan (updated):* Based on co-ordinated design
- *Process execution plan (updated):* The co-ordinated design should enable more accurate setting for the process execution
- *Performance management report (updated):* Based on co-ordinated design

Goals

- Fix all major design elements to allow the project to proceed to phase 7
- Gain approval to proceed to phase 7 and (in most cases) through to the end of the project
- Gain full financial approval for the project

Gate Status

- 'Hard' gate

'Are the major design elements fixed?'

2.6.2.2.8 Phase Seven - Production Information

The detail of the design should be determined to enable the planning of construction including assembly and enabling works. Preferably no more changes in the design should occur after this stage. Every effort should be made to optimise the design after consideration of the whole lifecycle of the product.

Before the Phase

- Review membership of design teams
- Review evaluation criteria for co-ordinated design (ideally design 100% complete)
- Review and update communications strategy

During the Phase

- Develop co-ordinated fabrication design/detail for the co-ordinated product model
- Develop production process map for on and off-site activities for each system/work package
- Start 'enabling works'

Deliverables

- *Project brief (finalized):* The solution and various options/requirements are all fixed for construction
- *Business case (finalized):* All needs and requirements have been incorporated to produce a product that satisfies the client
- *Procurement Plan (updated):* Sourcing of work packages and suppliers; Accommodate special equipment and other needs
- *Product model (co-ordinated):* Structural, mechanical and electrical elements should prepared to a high level of technical detail with corresponding specifications
- *Cost plan (finalized):* Resourcing of cash flow; Cash flow requirements
- *Production process map:* Include phasing of construction works; Detail description of work packages and interfaces between them to enable 'trouble free' construction works
- *CDM assessment (finalized):* All health and safety issues before construction works should be documented and finalized
- *Project execution plan (finalized):* The project execution should be firmly set to enable construction works and facilitate the measurement of the performance criteria
- *Process execution plan (finalized):* With regards to the start and finish times of the construction works the process execution plan should be finalized. However if construction works are phased there might be a need to continually adjust those dates
- *Performance management report (finalized):* The performance criteria for the project should be firmly finalized and not revisited unless circumstances are changed significantly i.e. main client requirement

Goals

- Finalize all major deliverables and proceed to the construction phase
- Gain approval to proceed through to phase 9.

Gate Status

- 'Soft' gate

'Is the detail 'right' for construction?'

2.6.2.2.9 Phase Eight - Construction

The design fixity and careful consideration of all constraints achieved at the previous phase should ensure the 'trouble-free' construction of the product. Any problems identified should be analysed to ensure that they do not re-occur in future projects.

Before the Phase

- Finalize all major deliverables such as the project brief, business case, project execution plan, etc.
- Finalize drawings for construction along with production information
- Ensure that all supplier bodies are in place
- Formulate contingency plans to accommodate possible obstructive elements such as weather

During the Phase

- Undertake construction works
- Manage and monitor costs, materials, equipment and quality of supplier's work
- Manage the construction process
- Review and implement handover plan
- Manage health and safety
- Liase with stakeholders for future needs

Deliverables

- *Product model (operational):* Site related requirements and fully responsive to any prescribed statutory requirements; Compatibility between 'work packages' and complete production information; All actual procurement, health and safety, cost and performance criteria should be presented and compared with pre-construction estimation to enable the feedback loop for future projects
- *Handover plan:* As built drawings; Service and operations information; Commissioning information; Defects rectification period

Goals

- Produce a building that satisfies all client requirements

- Handover the building as planned

Gate Status

- 'Hard' gate

'Are we ready to hand-over the facility?'

2.6.2.2.10 Phase Nine - Operation and Maintenance

The facility is handed over to the client as planned. The post project review should identify any areas that need to be more considered carefully in future projects. The emphasis should be in creating a learning environment for everybody involved. As built designs are documented and finalized information is deposited in the Legacy Archive for future use.

Before the Phase

- Construct building as planned
- Handover the facility with all the relevant documentation
- Store all the project information and learning lessons in the Legacy Archive
- Plan for on-going feedback from the client's organization
- Management team liase with contractor team to plan handover

During the Phase

- Undertake a post project review to examine the level of satisfaction by the client
- Examine the fulfilment of all success and performance criteria
- Establish continuous communications with the client
- Ongoing review of assets with regards to :
- Functionality
- Health and Safety
- Maintaining asset information

Actions

The lifecycle of the product is likely to be more than a decade. Therefore the facility Lifecycle should be considered and the facility examined in planned intervals either as part of the contractual arrangements or as part of continuous customer service. All lessons learned should be entered in the Legacy Archive and used for future projects.

Gate Status

Although there are no formal gates in the process, care should be paid in establishing a programme of continuous improvement that is communicated throughout the company and the company's organization

'What can we learn?'

2.6.2.3 Legacy Archive

This is a mechanism for storing, recording and retrieving project and process information.

2.6.2.4 Phase Review

The Process Protocol is managed using the Stage/Gate or Phase Review approach. Stage/Gate processes are generic in nature and they involve 'stages' (phases) of activities undertaken by multifunctional teams followed by decision 'gates' (phase review meetings). These Phase Reviews are manned by a multifunctional senior management group and representatives of the project team, as and when required.

The intent of each gate is to assure a high quality of work performance by multifunctional teams at each phase of the project. Phase Review Elements:

- Phase Review Outcomes
- Gate Status in the Process
- Phase Review Membership
- Phase Review Duration
- Phase Review Planning
- Phase Review Report

2.6.2.5 Deliverables

2.6.2.5.1 Introduction

Deliverables represent documented project and process information. These reports are compiled by Project Management to form the phase review report as prescribed by Process Management. It is then presented to the Development Management and members of the Phase Review Board at the end of each phase for reviewing and authorization. The number and nature (i.e. updates, revisions, finalized) of the deliverables presented at each phase is related to the development stage of the project.

The phase review documentation illustrates the likely deliverables at the end of each phase. The following descriptions are only suggestions for the content of the deliverables. There are many more references available to do with the detailed content of these documents both from industry and academic sources. The Deliverables might be in a number of states.

- Prime Activity Zone Responsibility
- Potential Activity Zone Membership

A number of Activity Zones will inevitably have prime responsibility for producing the majority of the required phase/project deliverables for each phase in the process.

The deliverable descriptions illustrate the likely prime responsibility of Activity Zones for respective deliverables

2.6.2.5.2 Stakeholder List

Stakeholders are those persons or organizations whose views, interests and/or requirements can have an impact or are impacted by the initiation and/or formulation and eventual implementation of the project solution.

In addition to the Activity Zones associated directly with the project, other general environmental, social and political issues need to be captured and documented.

Stakeholders may be prioritised to illustrate their importance and involvement from a client's perspective, in the proposed project.

The Stakeholder list is likely to include:

- Prioritised naming of the Stakeholders.
- A brief summary of their views, interests and/or requirements.

2.6.2.5.3 Statement of Need

It is very important that the clients' needs are clearly identified and understood before a building project is initiated.

The statement of need should aim to provide the project team with succinct indication of the clients' reason(s) for the potential project.

The statement of need is likely to include:

- Key objectives in strategic terms
- Outline problem, need or opportunity
- Preliminary assessment of risk

2.6.2.5.4 Business Case

Being able to make informed decisions throughout the duration of a project is critical to its successful implementation.

The business case should consider the risks, costs and benefits associated with any proposed solution from a number of perspectives, such as:

• Financial	Product	Customer
• Capabilities	Requirements	Needs, Requirements
• Alternatives	Specifications	and opportunities
• Trade-off's	Usability	Satisfaction

2.6.2.5.5 Project Execution Plan

A clear understanding of the requirements for project execution will potentially increase the chances for the successful implementation of the project.

The project execution plan will change as the project progresses in particular with regards to design changes and it is likely to include the following:

- Resources and duration needs for the potential and actual construction project
- Methods for developing and producing the proposed project solution(s)
- Identification of significant work items
- Contingency plans for specific elements of the project
- Program optimisation elements

2.6.2.5.6 Process Execution Plan

A clear and early understanding and identification of the process requirements for the project will potentially increase visibility and enable the production of the respective phase deliverables. The process execution plan will change according to the proposed project solutions offered and it is likely to include:

- Breakdown of the project into distinct phases
- Identification of the deliverables required at the end of each phase
- Duration estimations for each phase
- Information regarding the enactment of phase reviews i.e. content of phase review report, agenda etc.

2.6.2.5.7 Performance Management Report

In order for the development management, project management and all the other activity zones to gauge the progress of the project, a performance management plan should be produced. In addition to the strategic critical success factors (from the client's viewpoint) a number of operational measures should be established such as:

- Productivity
- Duration
- Budget

Process and project management should ensure that those measures are included for each phase of the process for consideration at the phase review meeting by development management.

2.6.2.5.8 Procurement Plan

The success or failure of a project could depend on providing the 'right' resources at the 'right' time and at the 'right' location. Procurement of resources can include the following categories:

- Services
- Products
- Finance
- Program

The Procurement Plan is likely to include:

- Resources plan for the next phase(s)
- Supplier and expert advice needed to undertake the activities at a particular phase
- Equipment (both in-house and sub-contracted) needed to mainly, undertake construction works

2.6.2.5.9 Construction Design Management (CDM) Assessment

In accordance with current CDM regulations, all health & safety issues related to any proposed project solution(s) must be addressed. Care should be taken to include the latest version of the CDM regulations to ensure conformity.

It is the client's responsibility to comply with the CDM regulations and therefore provisions for reporting on those issues should be made.

CDM assessment is likely to include:

- Pre-tender health & safety plan
- Health & safety files for proposed and chosen solution(s)

2.6.2.5.10 Project Brief

The aim is to mainly identify and define the scope of the project and more specifically that of the proposed solutions. The brief is, for the most part of the process, a 'live' document that changes as new information is presented. The Project Brief is likely to include:

- Definition of the scope of the project
- Completion dates and budgetary requirements
- Proposed project solution(s)
- Specifications for the proposed solution(s)
- Specific site related issues

2.6.2.5.11 Design Brief

Prior to the enactment of the feasibility studies a number of possible solutions to the need(s) might be presented. These should be documented and form the design brief.

The information presented in the design brief should be used to form part of the initial project brief and the updated business case.

Design brief differs from the 'concept design plan' in that the solutions offered, might not be 'construction' related e.g. operations management might satisfy the need and therefore solve the problem. Design brief is likely to include:

- Possible solutions to the need(s)
- Costs and benefits of proposed solutions
- Initial specification for the solution(s)
- Site and 'product' issues

2.6.2.5.12 Concept Design Plan

At the end of the substantive feasibility phase, the result of the studies should enable the project to proceed to the outline conceptual design phase after approval by development management. Concept design plan is likely to include:

- Which options should be considered in phase 4
- Likely time scales
- Resources needed to carry out the activities needed to produce the conceptual design(s)

2.6.2.5.13 Outline Concept Design

At the end of the feasibility studies and after the site of the development has been decided an outline concept design for the proposed solution(s) should be prepared. This will expand upon the detail of the substantive feasibility work carried out.

The outline concept design should aim to inform the business case with regards to the form, function, specialist requirements and program likely to be associated with the proposed solution(s).

The outline concept design should be informed by the project brief and at this phase special attention should be paid to any alterations made to the brief.

2.6.2.5.14 Full Concept Design

The full concept design should identify the major design elements of the proposed solution. It should be sufficiently architecturally detailed so that a submission for detailed planning approval can be made.

The design should also be developed as to enable the validation of the functional attributes i.e. end user working environment.
The full concept design should be informed by production management to ensure that it considers the methods of construction to be used and problems/needs/issues with regards to those methods are taken into consideration with the concept design.

2.6.2.5.15 Product Model

After the major design elements of the single solution have been decided upon, the detailed design work can be carried out. This will aim to present the design in the form of the product model. It should take into account any site related information available and be fully responsive to any prescribed statutory requirements. The model will become more defined as more detail is added to it. Depending on the phase of the process at which the product model is considered it will be termed as:

- Coordinated: comprise all of the major design elements such as structural, mechanical and electrical and it should be prepared to a high level of technical detail with corresponding specifications. The 'buildability' aspects of the design should be considered and reviewed.
- Operational: the coordinated product model is presented in terms of 'work packages' to enable the construction work to be carried out. When the compatibility between 'work packages' has been established, there should be complete production information to enable construction works

2.6.2.5.16 Cost Plan

The cost plan aims to identify the costs of the potential and actual construction project. The plan is for most part of the process a 'live' document which is updated, revised and finalized depending on the phase of the project as described by the process.
The Cost Plan is likely to include:

- Cost/benefit analyses for proposed solutions based on feasibility studies
- Cash flow requirements
- Resourcing of cash flow
- Value engineering report for design considerations

2.6.2.5.17 Maintenance Plan

As the design becomes increasingly defined and major design elements fixed, the maintenance needs of the finished facility/project may be considered. This will help the preparation of the project for handover and it may also inform the design through value engineering exercises. Maintenance Plan is likely to include:

- Planned maintenance schedule
- Budgetary requirements
- Human resources requirements
- Special considerations such as equipment and facilities
- Bill of quantities

2.6.2.5.18 Production Process Map

It may be necessary depending on the project in hand to phase the production of the project solution. In such cases the production process map should indicate the phasing strategy based on the latest project execution plan.

A number of factors may influence the decision for phasing of the production works such as:

- Timing of the delivery of the project solution
- Complex construction works
- Very large projects
- Facility requirements
- Accommodate alternative project solutions

2.6.2.5.19 Hand-Over Plan

When the construction works have been finished, the facility is handed over to the operation and maintenance teams. Hand-over plan is likely to include:

- As built drawings
- Service and operations information
- Commissioning information
- Defects rectification period

2.6.3 The Process Protocol Advantages

The Process Protocol, as defined earlier on, uses manufacturing experiences as a reference point (*Kagioglou, 1998c)* and maps the "…entire project process from the client's recognition of a new or emerging need, through to operations and maintenance" *(Cooper, 1998)*. Furthermore, continuous improvement is facilitated by providing the basis for company and industrial knowledge database development *(Aouad, 1999).* Some of the potential advantages of adopting the Process Protocol as the industry standard are *(Sheath, 1996; Aouad, 1998; Kagioglou, 1998a; Cooper, 1998)*:

- It takes a whole project view.
- It recognizes the interdependency of activities throughout the duration of projects.
- It focuses on the 'front-end' activities, paying attention to the 'identification, definition and evaluation of clients' requirements.'
- It provides the potential to establish consistency to reduce ambiguity, and it provides the adoption of a standard approach to performance measurement, evaluation and control to facilitate continuous improvement in construction.
- The stage-gate/phase-review process approach used facilitates concurrency and progressive fixity and/or approval of information throughout the process.
- It illustrates the need for completing all necessary phase activities before proceeding to the next phase ('hard' gates) or allows concurrency ('soft' gates) without jeopardizing the overall project success.
- It enables co-ordination of the participants and activities in construction projects and identifies the responsible parties.
- It encourages the establishment of multi-functional teams including stakeholders. This fosters a team environment and encourages appropriate and timely communication and decision making.
- It facilitates a legacy archive whereby all project information is collectively stored and can be used as a future learning vehicle.

2.7 Risk and Risk Management in Labour Based Works Projects

2.7.1 Introduction

The objective of this section is to describe the risk and risk Management in labour based works projects in order to demonstrate the alignment to achieving research objectives (see chapter 1).

2.7.2 Project risk management

A project risk is an uncertain event or condition that, it occurs, has a positive or a negative impact on at least one project objective, such as time, cost, scope or quality *(The Project Management Body of Knowledge, 2004:238).* There is uncertainty in all projects, and *risk management* is the means by which this is managed to increase the probability of meeting the project' objectives *(Young 2003:107).*

According to *Young, (2003:107), Holický (2009:141)*, *Burke (2001:230), Kerzner (2001:914)* risk management is a five step process as described below and Figure 2-6 and Figure 2-7 depicts risk management models.

- Define objectives / risk planning
- Risk identification
- Risk analysis
- Risk response / handling
- Risk monitoring and control

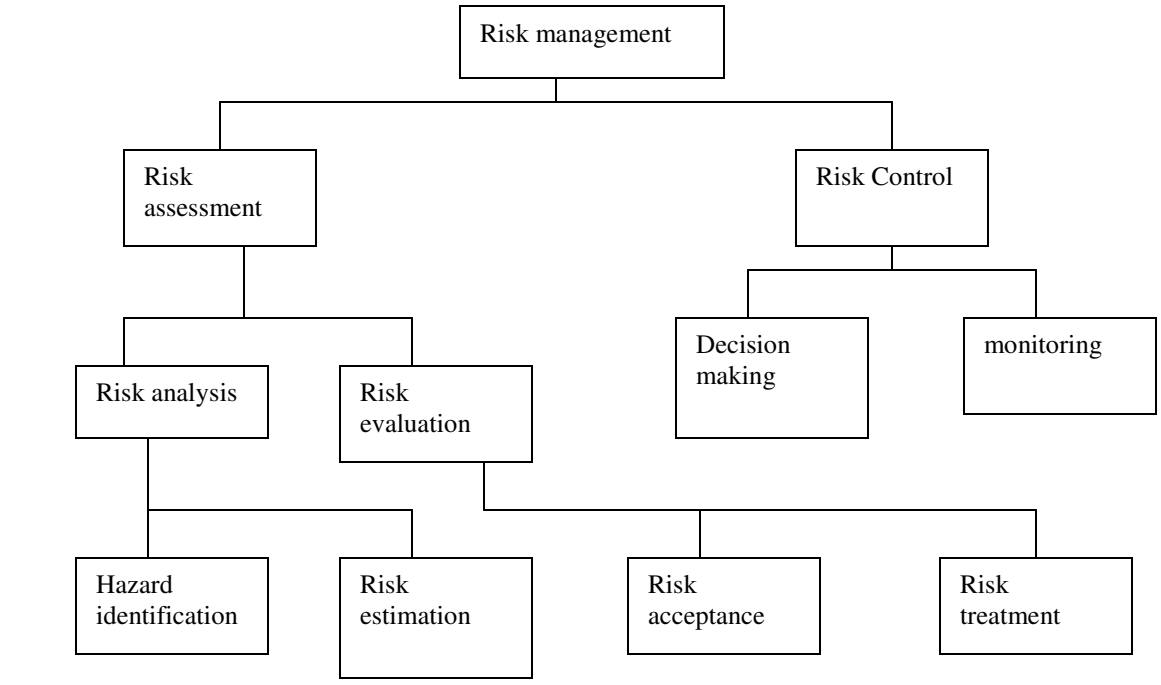


Figure 2-6: A framework for risk management (adopted from CAN / CSA - Q634-91)

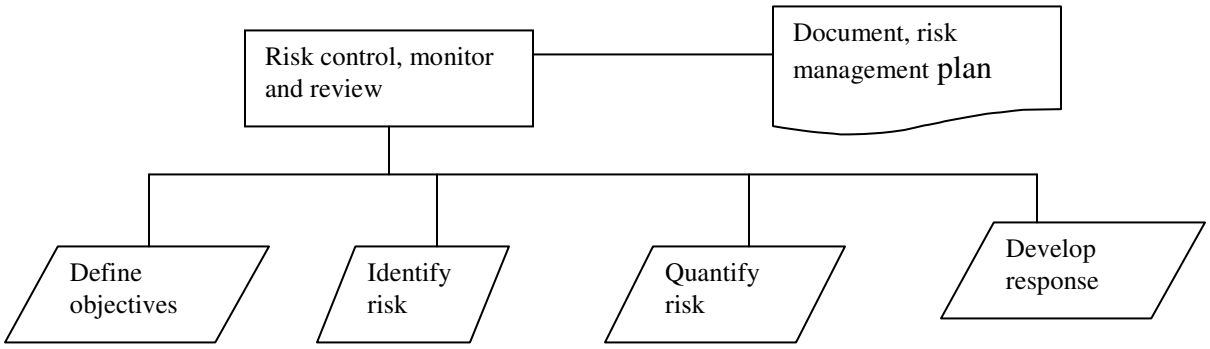


Figure 2-7: Risk management model

2.7.2.1 Define objectives / planning

This is the process of developing and documenting an organized, comprehensive, and interactive strategy and methods for identifying and tracking risk issues, developing risk handling plans performing risk assessments how risks have changed, and assigning adequate resources. It is necessary at the outset to define project goals and objectives in some detail. This is achieved through a breakdown structure, consider using the following

- Sub-divide by stakeholders
- Sub-divide by project management knowledge
- Sub-divide by Organisational Breakdown Structure – departments
- Sub-divide by Work Breakdown Structure – work packages
- Sub-divide by constraints (internal / external)

2.7.2.2 Risk identification

It is the process of examining the program area and each critical technical process to identify and document the associated risk. This step identifies what areas of risk uncertainty could prevent achieving the stated objectives – plan to prevent failure. Techniques for identifying risk include:

- Analysing historical records (closeout reports)
- Structure questionnaires
- Structure interviews
- Brainstorming
- Structured checklists
- Flowcharts
- Judgment based on knowledge and experience
- System analysis
- Scenario analysis (what – if)

2.7.2.3 Risk analysis (quantification)

Having identified a range of risks, the next step is to quantify the probability of the occurring and the likely impact or consequence to the project or to the amount at stake. Risk quantification is primarily concerned with determining what areas of risk warrant a response and where resources are limited, a risk priority will identify the areas of risk that should be addressed first.

Young (2003:115) recommends the following matrix to plot the probability of the risk occurring against the impact on the project.

(a)The probability occurrence on a scale of 0.0 to 1.0. a probability of 0.0 is very low, meaning that risk is most unlikely to materialize. At the other end of the scale, 1.0 is very high – essentially meaning a certainty that it will happen.

(b)The impact on the project if it does happen. A probability of 0.65 – 1.0 is HIGH, implying a significant effect on the schedule and project costs. A figure of 0.3 – 0.64 means a MEDIUM impact – a less serious effect on the schedule, some effect on costs. A figure of 0.0 – 0.29 means LOW impact – some effect on schedule, little effect on costs.

Impact of risk = probability of occurrence * impact (consequence) of risk

2.7.2.4 Risk response

Having identified, quantified and prioritised the risks, then a risk response plan which defines ways to address adverse risk and enhance opportunities before they occur is developed. The levels of risk should be compared against pre-established criteria, and then ranked to established management priorities. There are a range of responses which should be developed in advance during the planning phase

(a) *Avoidance risks* – risks that can clearly be avoided by revision of approach to the project. The initial schedule delivered for the business case may have to be revised

(b) *Transfer risks* – risks that could possibly be transferred to a third party for management and monitoring, such as suppliers and contractors.

(c) *Residual risks* – risks that can be managed and monitored within the project team.

(d) *Mitigating (reducing) risks* – means reducing the risks probability and impact. This could be achieved by using proven technology and standards to ensure the product will work. Developing prototypes, simulating and modelling are three methods which share the notion of using a representation to investigate selected aspects of requirements in order to be more certain of the outcome or suitability.

2.7.2.5 Risk monitoring and control

Once risks to the project have been identified and action plans derived then these must be monitored to make sure prompt action is taken when appropriate. Because any risk can change its characteristics with time, control of risk involves, first, monitoring risks and reporting the actions, and second, monitoring valid identified risks for any change of the probability and impact. All risks that happen become issues that must be resolved promptly to avoid any time – related cost impact on the project. Risk monitoring is assisted by the use of risk triggers in the schedule. These are marked on the schedule a short period before a particular risk is expected to occur. This alerts the risk owner specifically to watch out for signs of the risk occurring, and can reduce the probability of occurrence.

2.7.3 Benefits of risk management

According to *Young, (2006:109)*, the benefits of risk management include:

- The serious threats to a project can be predicted before they happen.
- Mitigation plans can be derived and implemented immediately.
- Contingency plans can be derived in advance.
- Valuable data for negotiating with supplies are obtained.
- The process creates clearly defined 'ownership' for risks to ensure they are monitored.
- It helps to create a 'no surprises' environment.
- It encourages decisive leadership rather than crisis management.

2.8 Summary

The chapter has reviewed previous and related work in the subject area and is by no means exhaustive. The review focused on background to labour based works, the relationship between poverty and employment creation to labour based works, existing management processes and the assessment tool – the Process Protocol. It also describes risk and risk management in labour based works projects. The aspects covered are related to the research objectives. The studied literature provides a solid foundation for this study and provides information to meet the objectives stated in chapter 1.The next chapter discusses the research methodology on how the mapping management processes of labour based works will be conducted in support of the relevant literature.

3 CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter explains the research design and methodology used. The methodology describes the methods by which research can be carried out and lies at the heart of any investigation *(Fellows and Liu 2003).* To be discussed are the research methodology, design, sampling, data collection methods and adopted methods for data analysis.

3.2 Research Methodology

This research was conducted within a qualitative paradigm and exploratory research methods for gathering data / information were adopted. Qualitative research requires study of spoken and written representations and records of human experience, using multiple methods and sources of data *(Punch, 2005:168)*. The use of qualitative research does not necessary imply adoption of 'methodological individualism' – the view that all explanation can be reduced to accounts at level of the self – directing individual – which is propound by some scholars *(Boudon, 1981)* and rejected by others *(Runciman, 1983; Sayer, 1984).* A qualitative research method facilitates in-depth study, produces overwhelming detailed information with a smaller number of people and provides a great understanding of the topic under study though it takes a great deal of time to collect data and the analysis requires some degree of interpretation, which may be subjected to bias and subjectivity.

3.3 Research Design

Research design is the process of situating the researcher in the empirical world and connecting research questions to data *(Denzin and Lincoln, 1994).* According to *Hancock (1998),* the main examples of methods of collecting qualitative data are individual interviews, focus groups, direct observation and case studies. The research design of this study will be presented in fairly broad terms. Firstly a literature review of current practices of management processes of labour based works is required. Then interviews to seek expert opinion shall finally be conducted.

3.4 Sampling

No study whether quantitative or qualitative or both can include everything: 'you cannot study everyone everywhere doing everything' (*Miles and Huberman, 1994:27).* Qualitative research would rarely use probability sampling, but rather would use some sort of deliberate sampling *(Punch, 2005: 187).* Purposive sampling will be adopted for this research. Purposive sampling means sampling in a deliberate way, with some purpose or focus in mind. Any country that has ever implemented labour based works shall be purposefully selected for this study. The programmes to be considered should have been initiated to generate social assets of good quality with cost effective production methods using labour-based technology. The sample of experts was based on the balancing of development planners and construction engineering and management experts. This choice was based on the background or assumptions that this is how operational activities of labour based works are defined and implemented. The reasoning behind selection of programmes from Sub-Saharan Africa and Pacific / Asia was that the two regions have high poverty indices according to the literature review *(see Fig 2.1).* Both regions have had many labour based works programmes with variances in documentation. Pacific / Asia programs have slightly been better documented than Sub-Saharan Africa programmes. Malawi Government / European Union Public Works and Income Generating Public Works Programme (IGPWP) are labour based works implemented in Malawi under the funding of European Union. A South African consultant – Africon was used as a technical assistant.

3.5 Data Collection Methods

The two main adopted techniques of collecting qualitative data used in this research are literature review and interview.

3.5.1 Review of Literature

There is a lot of literature on the concept of labour intensive public works programmes. The review of literature was undertaken throughout the study to build up a solid theoretical base for the research area and a foundation for addressing the problems and achieving the research objectives. The information was sought from various sources including industrial and academic publications, institutions and university databases, the Internet, papers presented in seminars,

workshops and conference and text books, project physical progress and evaluation reports, and government policies on poverty and employment creation.

3.5.2 Interview

According to *Patton, (1980)* there are four types of interviews, namely informal conversation, interview guide approach, standardized open-ended and closed quantitative interviews. For the purposes of this research telephone interviews / emails were used. This tool was utilized to confirm expert opinion on the management processes of labour based works and when there were gaps of information during the literature reviews and in project documents available. The personnel included those from Income Generating Public Works Program (IGPWP) in Malawi, The Director of Planning and Rural Development in the Ministry of Local Planning and Rural Development (Malawi), The Director of Planning in the Ministry of Economic Planning and Development (Malawi). The above interviewees provided insights and material sources in terms of project documents, project planning manual and planning handbook for District Assemblies in Malawi which assisted in this research.

3.6 Data Analysis

.A comprehensive review of literature (sources see data collection methods) focused on processes and strategies adopted for labour based works programmes. Information obtained from these sources was critically analysed and had to be filtered according to the nature of activity and / or deliverable of a particular phase of the Process Protocol (PP). The development of the processes for activity zones was based on Process Protocol guide (see Appendix 1) (Kagioglou, 1998). The Process Protocol map was examined horizontally across activity zones. At all times, the content of each phase was considered in relation to best practices of labour based works to extract relevance. The findings were substantiated using suitable examples of countries with experience in labour based works. However during the filtering, it was noted that there were some difference emerging in certain aspects and activities e.g. in development management, the Process Protocol has business case, a terminology not available in labour based works as they are not business oriented endeavours. Further literature was therefore being referred to, in particular textbooks of development and project management so that such activity could be located to a particular phase.

Given the use of the aforementioned methods for undertaking the research objectives, synthesis of the research findings was essential in addressing the objectives of the research, in addition to aiding in putting together this dissertation. The research synthesis was an attempt to provide a whole out of numerous parts so that findings can be presented in a clear and brief manner. Using the literature reviews and valuable information from interviews and effective framework: the Process Protocol for labour based works, was drawn.

3.7 Summary

This chapter identified procedures and methods of collecting information from different sources as applied for this study. Literature review has been the main method of collecting such data. The parts of information were synthesized into a whole to make this report. Experiences and practices in terms of the management processes and risk factors affecting improvement of the management process thereof were extracted and consolidated and are discussed in Chapter 4 and Chapter 5 respectively as the key findings of the research.

4 CHAPTER 4 IDENTIFICATION OF MANAGEMENT PROCESSES OF LABOUR BASED WORKS

4.1 Introduction

The purpose of this chapter is to identify and analyse the management processes of labour based construction works. It seeks to provide data / information that could be used to satisfy the primary research objective described in chapter 1. The chapter shall review data related to management of labour based works in accordance with the Process Protocol (see chapter 2 and appendix 1). An attempt will be made to isolate issues pertaining to each level with reference to the approach discussed in chapter 3 on research methodology. The Process Protocol elements to be discussed are activity zones, phases, deliverables, phase reviews and legacy archive.

4.2 The Activity Zones

4.2.1 Introduction

There are three integrated approaches to managing processes of labour based works. The activity zones through which labour based works are managed are:

- National level
- Integrated local level and
- Project level.

4.2.2 National Level

Labour based works managed at national level have a national or regional dimension generally reflected in the size of the budgets made available through public expenditure or financial assistance from donors *(Majeres and de Veen, 2001:60).* Within South Africa, for instance, some provinces have greater administrative and management capacities than others, and *nationally designed employment programmes* have been successful to varying degrees across the provinces for this reason *(EPWP 2005: Annex B*). Kenya, Lesotho, Ghana, Malawi also implemented national labour intensive Programmes *(de Veen, 1983; McCutcheon, 2008:13 & 17). McCutcheon (2008:24)* recommends that the *national programmes*, for example, of rural road

construction indicate how to establish a large scale employment creation programme for the construction of public works: the process resulting not only in greater employment but also in the generation of individual and community capacities in technical and institutional terms. *National programmes* are established through:

- the adoption of a long-term national perspective in which a programme is developed;
- attention to technical, institutional, administrative, organizational and socio-economic detail during the preparatory lead-in phase and throughout the programme;
- institutional building at community, regional and national levels;
- extensive training at site, multi-site and national levels.

The success of the programme depends to a large extent on identifying a suitable agency with the mandate to deal with social issues and coordinate the implementation of the programme. In this case, government line ministries play a key role as labour based works are poverty alleviation programmes *(Yahie, 1996:143).* Labour construction Unit in Lesotho *(Majeres and de Veen, 2001:7)*, Department of Feeder Roads in Ghana *(Stock, 1996)* were established in the Ministry of Transport and Works. In Cambodia, Ministry of Rural Development was appointed as the government agency *(Tusanasorm and Johannessen, AB 14, 2002:10).*

At national level, the responsible institution *(de Veen and Thagesen, 1995:354)* ensures that:

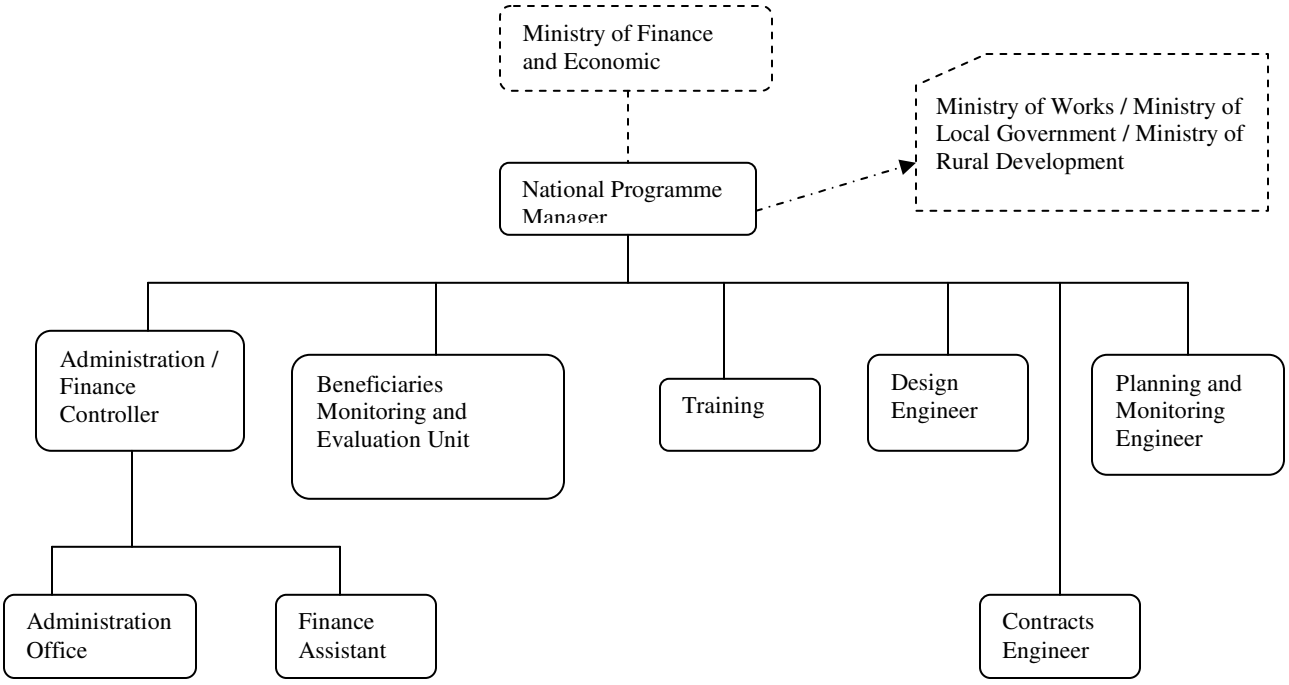
- development of project selection criteria
- preparation of budget requests at central level
- development of effective payment, planning and reporting procedures
- preparation for subsequent maintenance activities
- disbursement of funds to lower levels as appropriate.

The size of the central organisation for national programmes is dependent on the magnitude of the programme. They may consist of units based in a general works department or located in specialised agencies dealing with particular type of infrastructure *(Edmonds and Johannessen, 2003:33).* Table 4.1 shows various agency arrangements in various countries for national programmes.

Table 4-1: Agency arrangement for National Programmes

	Parties Responsibilities	**Parties involved**	**Country Experience**	**Process Protocol Activity Zone**
National Level	Development planning and budgeting	Ministry of Finance and Economic Planning	Lesotho (*Pama 1992)* Uganda *(Otemo, pro 1999:68)* Malawi *(Pratt and Newton, 2005*)	Development Management
	Works planning and monitoring	Ministry of Works, Housing, Transport and Communication - Department of Rural Roads Ministry of Agriculture and Ghana Highways Authority - Department of Feeder Roads Ministry of Local Development Ministry of Rural Development	Lesotho *(Pama, AB 10, 2000:14)* Ghana *(Stock, 1996:8*) Uganda *(Otemo, pro 1999:68)*	-Project Management - Design Management - Change Management - Process Management
Integrated Local Level	Works supervision, construction and maintenance	Department of Works - Regional / Provincial Offices - District Offices - Local District Council - District Assembly	Ghana *(Stock, 1996:8*) Uganda *(Otemo, pro 1999:68)* Malawi *(Pratt and Newton, 2005*)	- Resource Management - Production Management - Facilites Management - Change Management - Process Management

Figure 4.1 below shows a national level unit which could be established for a rural infrastructure project.



Source: Edmonds and Johannessen, 2003:33; Pratt and Newton, 2005

Figure 4-1: Organogramme for National Level Unit

4.2.3 Integrated Local Level

This involves planning for all sectors or types of activity within a particular geographical area e.g. district councils (assemblies) or provincial (regional) offices. There are several facets to management of labour based works at integrated local level.

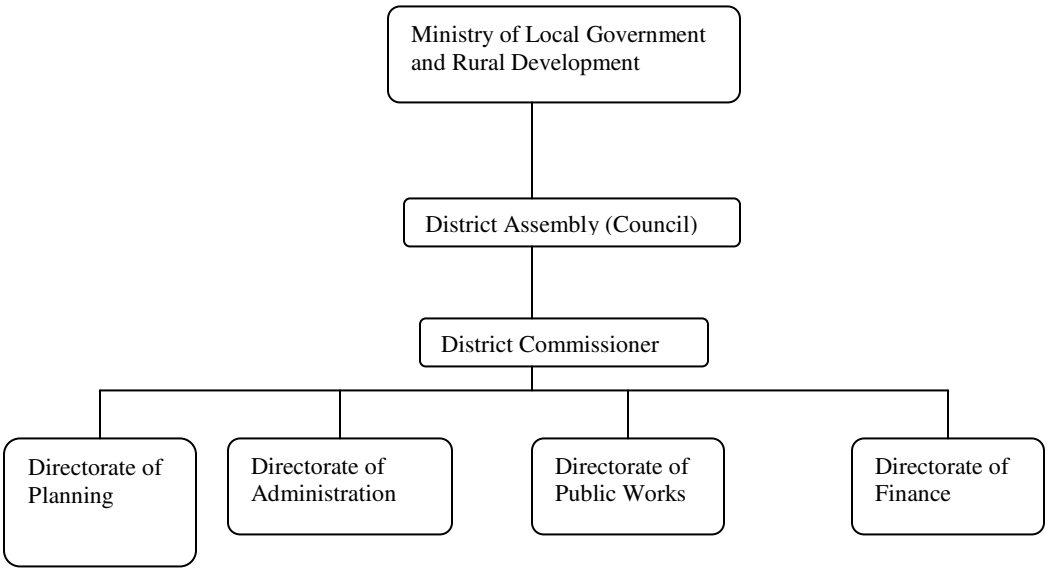
- Firstly, the local authorities take full charge of implementation of large scale programmes of works initiated by national level and the national level only deal with overall coordination, mobilisation of funds and monitoring *(Edmonds and Johannessen, 2003:27)* e.g. Pradhan Mantri Gram Sadak Yojana (PMGSY) by Government of India in 2000 *(Vaidya, 2002:23).*
- Secondly, pilot projects which are implemented with technical assistance in order to provide a sound base for a large scale programme *(Thagesen and de Veen, 1995:355)* e.g. the provinces of Xiengkhuang, Houaphan and Vientiane in Lao People's Democratic Republic around 1980s *(Johannessen, 1996:2; Impact Assessment Report, Lao 1999:2).*

- Thirdly, Small-scale labour-intensive public works (roads, social infrastructure, sanitation works) implemented by decentralised local government agencies and NGOs operating at sub-national level *(Devereux and Solomon, 2006:5)* e.g. the *Trabajar* public works programme in Argentina during the 1990s was financed by the Federal government, using a fund raised through a national pay-roll tax – the *Fondo Nacional de Empleo (Márquez 1999: 8).*
- Fourth, donors and / or government may be targeting a specific geographic area due to emergency or crisis response e.g. Solomon island, Southern Sudan *(Shone, AB 17, 2004:27).*

Developing countries have continued to seek ways to facilitate participation in development by their citizens especially the rural poor and have continued to establish and strengthen local authorities. Local governments are believed that can take advantage of their capacity to better mobilize local information. This gives them an edge with implementation responsibilities, since they will better reflect local needs and priorities. Shorter run monitoring and evaluation is tied to implementation at a decentralized level, while the national level assesses the longer term impact. Decentralization can also promote greater efficiency and effectiveness in managing development programmes. It can help to speed decision-making, increase flexibility and responsiveness, improve coordination among the various agencies or departments, and in some situations, reduce administrative costs. *A quick assessment of this reform in Uganda by Goran Hyden revealed that for the first time in many years, the programme of decentralization brought the rural masses eye to eye with government bureaucrats (Yahie, Matovu and Kithakey 1996:61 - 63).*

Labour intensive public works require an extensive and solid network of institutions at the local level, with the technical and operational capacity to choose the works to be done, to organize the production process, and to channel resources to the needy poor (*Márquez 1999: 14*). Equally, it is important to not only have sufficient technical know-how but the local authority should also possess a financial management capacity *(Edmonds and Johannessen, 2003:50),* planning and monitoring capacity *(Otemo, pro. 1999:68).*

Figure 4.2 is the local government administrative structure in Malawi presenting the departments as described above.



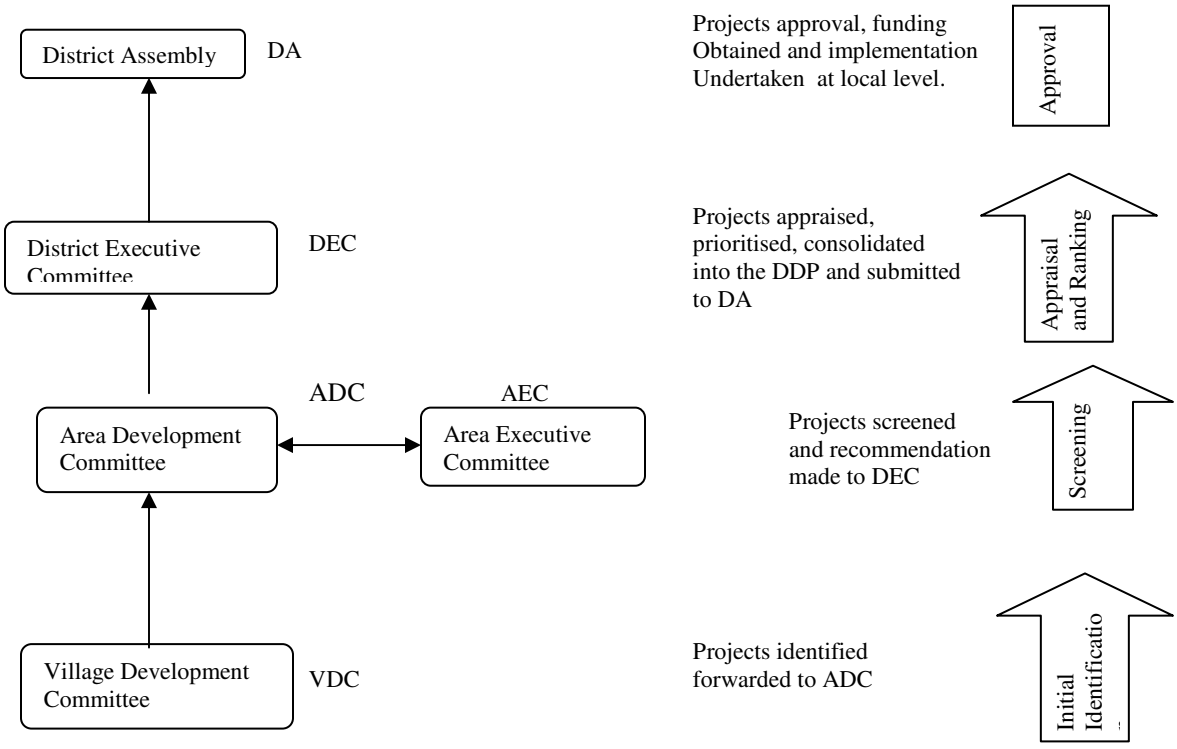
Source: Plangroup, 2005:14

Figure 4-2: Local Government Administrative Structure

The Table 4.2 and Figure 4.3 below describe a typical local works authority and local planning authority respectively.

Table 4-2: Local Works Authority Models

A	B		C
Provincial Level	**District Level**		**Local Authority Unit for Rural Infrastructure Development Works**
Lao PDR	**Botswana**	**Malawi**	
Provincial Programme Manager - Finance and Administration - Provincial Road Engineer - Inspector Construction - Site supervisor - Maintenance Unit	District Engineer - Technical Officer (Roads) - Technical Assistant	District Engineer - Roads Supervisor - Roads Foreman	Chief Engineer - Planning and Monitoring Engineer - Assistant Engineer Roads - Assistant Engineer Civil Works - Maintenance Unit Maintenance Unit Chief Maintenance Engineer - Routine Maintenance Overseer - Financial and Administrative Services - Engineer Periodic Maintenance - Inspector.
Johannessen, 1996: 59	*Muatjetjeja, 2006:83*	*Plangroup, 2005:14*	*Edmonds and Johannessen, 2003:50*



Source: Planning Guideline- Rural Transport Infrastructure (RTI) – 2004:25

Figure 4-3: The Local Level Institutional Planning Framework (Malawi and Ghana).

In Figure 4.3 and Appendix 2, once the political bodies at District Assembly (DA) level have set their priorities, the plan of projects is submitted to the local authorities for implementation. The local authorities would then engage their technical staff – Directorate of Public Works to develop detailed plans and detailed cost estimates. This information is finally fed into the annual work programme and budget of the district/ province (*Johannessen, AB 12, 2001:16; Edmonds and Johannessen, 2003:52).*

Table 4-3 below sums up the flow of activities in Figure 4-2, Table 4-2 and Figure 4-3 in terms of the Process Protocol activity zones. It can be observed that the integrated local level is a mirror of the national level with respect to the institutional arrangements

Table 4-3: Local Authority Rural Infrastructure Development Arrangement

	Parties Responsibilities	Parties involved	Process Protocol Activity Zone
Integrated Local Level	Development planning and budgeting	Directorate of Finance and Planning - Monitoring & Evaluation - Community Development	Development Management Process Management
	Works planning, monitoring, supervision, construction and maintenance	Directorate of Public Works	-Project Management - Design Management - Change Management - Process Management - Resource Management - Production Management - Facilites Management - Change Management
Local Community	Project identification	VDC, ADC assisted by AEC	- Facilites Management - Production Management - Resource Management

4.2.4 Project Level

McCutcheon (2008:18) recommends that a *programme approach* to labour based works must be adopted to ad hoc projects. The programme must be treated as proper engineering. *Gray and*

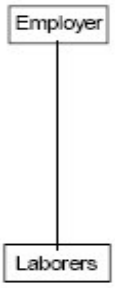
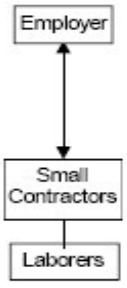
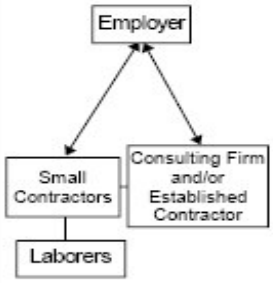
Larson, (2008:6-7) stated that programmes and projects are similar in the sense that they both are directed toward goals and require plan and resources to reach their goals. Both use similar tools, methods, and policies. The differences lie primarily in scope and time horizon. A programme is a series of coordinated, related; multiple projects that continue over extended time intended to achieve a goal. For the discussions in this study, programmes and projects shall mean the same.

Since the 1970's donors and international organizations have promoted labour-based methods for road rehabilitation as one means of mitigating rural unemployment in developing countries *(Stock, 1996).* During this period, the general trend in donor support to developing countries had been to give financial and technical support directly to established institutions *(Nilsson, AB 2, 1993:1).* Pilot projects were initiated and then transformed into large-scale construction programmes in Kenya, Botswana and Lesotho. These programmes have often been described as "force account". This stems from the days when a Department of Works was responsible for construction and maintenance and employed its "work force" on a" permanent and pensionable" basis *(Croswell and McCutcheon, 2001: 369).* During the 1990's significant exploration of small contractor development took place in the large scale programmes in Kenya and Lesotho. In addition, the use of small contractors for maintenance was considered right from the start of the programme in Ghana *(Croswell and McCutcheon, 2001: 371).* In 1986 Ghana became the first Sub-Saharan African country to launch a programme introducing labour based methods in the local road contracting industry *(Stock, 1996:4).*

With the above significant shift towards increased involvement of the private sector, particularly in the implementation of civil works, many countries had to establish an agency capacity to manage and monitor the contract work *(de Veen, AB 8, 1999:1).* In choosing an effective organizational strategy as *Uphoff (1986)* notes, decisions must be made on whether to work with and through existing organization or to establish new ones. A common tendency had been to fall back on existing structures *(Aziz, 1993)*, despite concerns that "existing organizations would be too traditional to be able or willing to take on modern development tasks, or that they so controlled by rural elites that they would not reach and serve majority." (*Uphoff, 1989:15).* Both structures have their advantages and disadvantages. Table 4-4 summarises options for managing

labour based works projects using both government and the private sector *(Stock and de Veen, 1996:27).*

Table 4-4: Production arrangement, approaches and basic delivery mechanisms

Production Arrangement	*Force Account*	*Contracting*				
Approach	*Force Account*	*Using Established Contractors*		*Developing Small-scale Contractors*		
Delivery Mechanism	*Force Account*	*Conventional*	*Sub-contract*	*Govt-run*	*Agency*	*Development Team*
Diagram						
Countries (examples)	Benin, Botswana, Burundi, Cambodia, Chad, Columbia, Dom. Repub. Ethiopia, Honduras, Indonesia, Kenya, Laos, Lesotho, Malawi, Mozambique Namibia, the Philippines, Rwanda, Tanzania, Thailand, Zambia, Zimbabwe	South Africa	India, South Africa	Benin, Cambodia, Ghana, India, Indonesia, Kenya, Lesotho, Madagascar, Namibia, Nepal, Sierra Leone, South Africa Tanzania, Uganda, Zambia	**AGETIP:** Benin, Burkina Faso Chad, The Gambia, Guinea-Bissau Madagascar, Mali, Mauritania, Niger, Senegal, Tanzania **Consulting Firm:** South Africa	South Africa

Note: Arrows represent contractual relationships, broken lines represent employment relationships, and unbroken lines represent other relationships.

Source: Stock and de Veen, 1996:27

Different kinds of projects therefore may require different institutional structures, and there is no such thing as an ideal organization structure *(Yahie, 1996:144).* The following discussion refers to those cases in which government does exercise direct overall programme control. The Government of Malawi (GoM) undertook a four year safety net Public Works Programme

(PWP) to alleviate poverty and the funding of European Union (EU) *(Lwanda and Esterhuizen, AB 19, 2003:5).* Under Government of Malawi (GoM) / European Union (EU), Public Works Programme (PWP), the institutional framework was made of:

- Programme Steering Committee
- Technical Committee (PSC sub-committee)
- Programme Management Unit (PMU)

Table 4-5: Institutional arrangement for IGPWP (2001)

	Team Membership	**Overall Responsibilities**
Programme Steering Committee (PSC)	Ministry of Local Government (Chairperson) Head of the PMU (Secretary) National Authorizing Officer (NAO) National Roads Authority (NRA) Department of Forestry Department of Irrigation Ministry of Poverty Alleviation A representative of the European Union Representatives of the District Assemblies	In terms of the financing agreement for the Project Management Unit (PMU), a Programme Steering Committee (PSC) was formed to provide overall guidance to the programme. The PSC would meet bi-annually, but more often if so needed to oversee and validate the overall direction and policy of the programme and to approve Work Plans and consider progress reports.
Technical Committee (PSC sub-committee)	Chairperson of the PSC PMU component officer relevant to the Agenda Item NAO Office Representative EU Delegation Representative Line departments as relevant to the Agenda Item	The PMU in all likelihood required policy directives (as distinct from project and programme financing approvals) from the PSC on a more frequent basis than it intended for the PSC to convene. For this reason, it was agreed to form a Technical Committee to meet more regularly to make technical decisions and to report to the full meeting of the PSC.
Programme Management Unit (PMU)	General management - Project Manager Technical management Roads - Contracts Manager Technical management Environment - Environmentalist Technical management Forestry	• Prepare and administer Annual Work Plans and cost estimates. Manage the programme by letting labour based contracts and administrating the contracts in the following components - PMU (Management and Administration), roads forestry and irrigation

	Technical management Irrigation Technical staff Forestry and Irrigation Accounting, Administration & security - Accountant - Administrator District Technical staff (Zones) - Construction Engineer - Construction Roads Supervisor - Roads Supervisor (Maintenance) Administration & security (Zones) Plus outsourced services: Design management -Chapita consulting engineers -David consulting engineers Monitoring and evaluation consultant	• Manage and control the tendering process from inception (development of the documents) to the awarding of the contracts. • Full financial management and control through a transparent accounting system, regular audits • Reporting and information dissemination to the PSC, EC Delegation, Government, Donor communities and Public • Conduct an Environmental Impact Assessments and establish an Environmental Management Plan • Develop a Management and Evaluation (M&E) system • Initiate Specialist Studies • Advise the PSC about other similar activities in the country, actions and decisions to be taken in the interest of the programme

Source: GoM / EU PWP (Malawi) Inception Report, 2001 :5 -7

By examination of the PMU structure and its responsibility in Table 4-5 above and with respect to activity zones of the Process Protocol, the PMU was intended to cover the following management areas:

- Project Management – project manager
- Design Management – consulting engineers and environmentalist
- Change Management – project manager / contracts manager
- Process Management – monitoring and evaluation specialist
- Resource Management – contracts manager
- Production Management – construction engineer
- Facilities Management (training stage) – roads supervisor

Though Process Management is not clearly defined in Table 4-5 the Terms of Reference required the PMU to conduct a study to determine the monitoring and evaluation requirements for the Public Works Programme so that a Monitoring and Evaluation (M&E) System could be

set up. The PMU was required to consult with the various line function departments of the GoM so that the M&E system will be compatible with their standards, practical and effective. A two-tier system was established *(GoM / EU PWP (Malawi) Inception Report, 2001 :26):*

- For the monitoring of the project level progress as implementation by the PMU;
- For the monitoring of the programme by external M&E experts.

With the above activities under a PMU and from Table 4-1 and Table 4-3, the national level and integrated local level would only be involved in Development Management at initiation phase and Facilities Management after completion of the project.

In order to obtain the required sustainability of a small scale contracting programme, there had been an equal, if not larger, capacity building requirement on the government side *(Johannessen, AB 12, 2001:18)* to acquire the skills mentioned under the PMU. It can therefore be said that the non-availability of the multi-teams as required by the Process Protocol at the national and integrated levels facilitates outsourcing of management services of labour based works projects.

4.2.5 Summary

The section reviewed the institutional and organisation framework for labour based works projects. Three operational levels have been identified: National level, Integrated local level and Project level.

- Labour base works can be initiated at either national level or integrated level. For either case, the implementation is left to the integrated local level.
- For an agency or a line ministry to implement labour based works it must have the multi-functional teams of the activity zones of the Process Protocol. These are: Project Management, Design Management, Change Management, Process Management, Resource Management, Production Management, Facilities Management (training stage), Change Management and Process Management.
- Planning and financing (Development Management) and maintenance (Facilities Management) are retained at either national level or integrated local level while the rest of activity zones are delegated to project level.

- Because of inadequate capacity at both national level and integrated local level, the trend has been use of Programme Management Units for implementation of labour based works programmes.
- A number of options are available with respect to project implementation
    - The creation of one or more special implementation agencies
    - Implementation of components through the normal activities of the line ministries.
- To maintain overall responsibility of the labour based works, the PMU work under the leadership of Programme Steering Committee and the Technical Sub-committee.

It can also be concluded that initially a project has to be planned and its finances sourced, then it gets implemented. Upon completion of the construction, the infrastructure has to be maintained. With this background, labour based works goes through a life cycle just as a product does. The next section therefore discusses the phases through which labour based works are planned and implemented.

4.3 The Phases and Deliverables

Below is a summary of the phases together with processes of the Process Protocol (Chapter 2 and Appendix 1) on which the research is based to construct the management processes for labour based works:

- Phase zero : Demonstrating the Need
  - Establish need for project — prepare outline business case
  - Prepare project execution plan — assess stakeholders involvement
- Phase one: Conception of Need
  - Prepare project brief — Revise business case
  - Revise project execution plan — prepare design brief
  - Assess site and environmental issues — prepare design brief
- Phase two: Outline Feasibility
  - Undertake feasibility study for each option
  - Revise business case — Assess site and environmental issues
- Phase three: Substantive Feasibility Study and Outline Financial Authority
  - Revise project brief — Revise business case
  - Revise project execution plan — Prepare procurement plan
  - Prepare concept design brief — Define key systems and criteria
  - Revise site and environmental issues
  - Inform on statutory criteria and statutory issues
  - Prepare Construction Design Management (CDM) assessment
- Phase four: Outline Conception Design
  - Revise project brief — Revise business case
  - Revise project execution plan — Revise procurement plan
  - Prepare cost plan — Prepare outline concept design
  - Revise site and environmental issues
  - Inform design process — Revise CDM assessment
- Phase five: Full Conception Design
  - Revise project brief — Revise business case
  - Revise project execution plan — Revise procurement plan
  - Prepare cost plan — Prepare full concept design

    - Revise site and environmental issues
    - Prepare maintenance plan Revise CDM assessment
- Phase six: Coordinated Design, Procurement and Full Financial Authority
    - Revise project brief Revise business case
    - Revise project execution plan Revise procurement plan
    - Prepare cost plan Prepare work packages
    - Produce product model (co-ordinated design
    - Revise maintenance plan Revise CDM assessment
- Phase seven: Production Information
    - Revise project brief Revise business case
    - Revise project execution plan Finalise cost plan
    - Procure work package suppliers Monitor cost and quality
    - Finalise co-ordinated product model
    - Start enabling works Finalise health and safety plan
- Phase eight: Construction
    - Implement handover plan Monitor procurement
    - Monitor cost and quality Develop operational product model
    - Manage and undertake construction activities
    - Manage on-site resources and labour Develop operational product model
    - Manage health and safety Implement handover plan
- Phase nine: Operation and Maintenance
    - Under post project review ongoing review of facilities life cycle

After all the processes have been isolated, the summary will identify the various phases in the following form:

- *Introduction:* introduces brief objectives of the phase
- *Processes:* activities carried out to bring about the deliverables of the phase
- *Deliverables* :outputs of the activities
- *Goals:* identify reviews and approval requirement before the next phase
- *Gate status:* identifies type of stage gate before going into the next phase.
- *Process Flow Diagram:* depicting tentative logical flow of information though some processes might be done concurrently within a phase.

4.3.1 Phase Zero - Demonstrating the Need

4.3.1.1 Introduction

Conducting a needs assessment for labour based works has series of pitfalls. The danger is that it will do little more than produce a catalogue of maladies that everyone knows about anyway. The intent of doing assessment of needs should be to discover issues for action, using and developing the rural poor capabilities. It is intended to result in 'reduction of uncertainty' *(McKillip, 1987:19).* Needs assessment are generally performed for one of the three reasons *(Weyers, 1999: 161)*

- To see if there is any need for action
- To help design or direct some already contemplated action
- To confirm what is an already known and to justify an already decided action

There are four key activities included in Phase Zero of the Process Protocol (Appendix 1):

- Establish need for a project
- Prepare Outline Business Case
- Prepare Project Execution Plan
- Assess Stakeholders

4.3.1.2 Establishing Need for a Project

A need for a labour based works project can be established at either national or integrated local level.

4.3.1.2.1 Project need establishment at National level

Establishment of need at national level involves three steps: undertake poverty situation analysis, develop development plan and create enabling policy and legislative environment.

(a) Undertake poverty situation analysis

For the purpose of designing effective and operational poverty alleviation programme and policies one must, first of all, know who the poor are, where they are and what causes their poverty. Identifying and measuring poverty requires data on economic conditions of

households and individuals. Many countries (see Table 4-6 and Chapter 2 -Table 2-1) therefore are typically gathering data through household surveys (Yahie*, 1996:128*).

Table 4-6: Country experience with household surveys

Country	Description	Comment
Ghana	A household survey in 1987 – 1988 indicated that more than 36 percentage of the population were poor (*Ayetteyi, Ntim and Saleh 1993).* In 1986, Ghana introduced labour based methods in local contracting industry (Stock, 1996:4).	Household surveys collect data on causes of poverty, demographics, incomes, expenditures, spatial picture of poverty, deprivation, vulnerability and other characteristics such as area of residence and participation in the labour force.
Malawi	Integrated household survey in 1998 indicated that 65.3 percentage of the population were poor (*MPRS – 2002: 11*). The Government of Malawi / European Union Public Works Programme (GoM / EU PWP) was initiated in 1998 (*Pratt and Newton, 2005:6).*	

Thus data from household surveys are suitable not only for identifying and aggregating poverty but also are suitable for constructing poverty profiles. A poverty profile shows how aggregate poverty indices differ according to various characteristics *(Foster, 1994).* A poverty profile will quantify the incidence of poverty in the country. Various measurement techniques will provide different pictures of poverty. Two frequently used indicators are the "poverty headcount" and the "poverty gap" though a variant of the poverty gap – the "squared poverty gap" – provides a measure more sensitive to the very poorest *(Samson, Van niekerk and Mac Quene, 2006)*. The poverty line and the poverty gap are both used to construct the poverty profile for a country (*Boeteng 1990, Grootaert and Kanbur, 1990)*

The information on poverty dynamics is very critical. It helps to formulate labour based works which can more effectively address transitory shocks that increase unemployment than chronic poverty that disproportionately affects children and older people. An understanding of coping mechanisms is important to evaluate the feasibility of targeting. Concrete quantitative information is required for analysis and advocacy (*Samson, Van*

Niekerk and Mac Quene, 2006:23). The headcount ratio stipulates how much a household needs to get out of remunerative employment in order to move out of the poverty line. By knowing the main source of cash income will determine the readiness and availability of motivated labour to participate in public works. A thorough understanding of the nature of poverty in the country will enable policymakers to better identify social needs, development objectives and more accurately predict the likely impact of public work programmes.

(b) Develop a development strategy

Having identified problems associated with poverty in the poverty profile above, there arises a need to find means on how to address the dire situation. As a response to the rural poverty, many developing countries place poverty reduction as a central objective of national socio-economic development strategy. A home grown national development strategy must be developed through consultation with stakeholders.

Table 4-7: Country experience with development strategy

	Development Strategy	**Comment**
Botswana	National Development plan (*ASIST Bulletin No 19, 2005:16)*	The development strategy must call for the creation of meaningful employment creation, involvement of the private sector in the building of the economy and greater use of locally available resources as well as the application of labour based methods.
Namibia	White paper *(Hjelm, 1997).*	
Malawi	Poverty Reduction Strategies Papers (PRSP) (MPRSP – 2002)	
Ghana	Poverty Reduction Strategies Papers (GPRS – 2003)	

According to *Ellis and Freeman, (2005:336)*, poverty development strategies are to be country driven, participatory and results oriented. The process of developing Poverty Reduction Strategies Papers (PRSP's) places countries themselves in the lead in terms of devising and driving their own development strategies and agenda. A PRSP is a description of country's macro, social and other policies and programmes designed to promote growth and reduce poverty. It serves as the main framework for donor assistance. The specific objectives of the PRSP include linking policy, planning and budgeting; identifying development objectives and priorities; improving the quality of

expenditure and thus leading to efficiency gains; harmonization of development financing frameworks; and monitoring and evaluation of poverty reduction programmes *(Kiringai and Manda, 2002).* The thematic areas of these Poverty Reduction Strategies Papers (PRSP's) must include and prioritise provision of remunerative employment using labour based works.

The first initiatives towards integrated approach to poverty occurred during mid-1990's but it was the establishment of PRSP framework as part of the enhanced Highly Indebted Poor Countries (HIPC), and as a replacement for structural adjustment lending by IMF and World Bank that precipitated the preparation of interim and final PRSP documents (*Ellis and Freeman, 2005:35).* During the period in which the World Bank and the IMF were formulating the concepts of a Comprehensive Development Framework and Poverty Reduction Strategy Papers, the International Labour Organisation (ILO) was undertaking a similar exercise of reflection around its Decent Work agenda. At the invitation of the governments of Tanzania, Mali, Ghana, and Pakistan, International Labour Organisation (ILO) made a major input on remunerative employment using labour based methods into the PRSP process *(ILO, World Bank and IMF – PRS, 2002).*

(c) Create enabling policy and legislative environment

Rural poverty accounts for a significant proportion of overall poverty in many countries. Poverty in Africa is a rural phenomenon, a situation that is also true of other world regions (*Bisten, 1986; Ravallion, 1994*; *World Bank 2001a; International Fund for Agricultural Development 2001).* Kenya rural poverty worsened from estimated 46.8 percentage in 1994 to 52,9 percentage in 1997 and was estimated at 59.6 percentage in 2000 (*Ellis and Freeman, 2005:332).* Poverty is more widespread in rural areas than urban areas. It is estimated that 66.5 percent of the rural population in Malawi lived in poverty as compared to 54.9 percent for urban areas. Yet as many as 90 percent of the population lived in rural areas. *(GoM, 2000 - the Integrated Household Survey, 1998).*

The District Focus for Rural Development was adopted in Kenya in July 1983 with an aim of broadening the base of rural development efforts, encouraging local initiative and

more decision – making in the day-to-day operation of development projects closer to the people for whom development is meant *(CBS. 1984, section 2, p.6).*The District Focus for Rural Development revitalized planning and implementation of rural development projects by decentralizing and delegating power responsibility to district and sub-district committee. The decentralization of responsibilities and authority *(Garnier and Majeres, 1992*), which is essential for local-decision making, is key factor in the success of all these labour intensive programmes. The programmes under way in Madagascar and Guinea belonged to the category of decentralized works which aimed primarily at the needs of the local communities.

In support of decentralization policy, labour intensive works require the development of implementation policies for specific sector which is the focus of the programme.
The Government of Malawi developed the Malawi Agriculture Sector Investment Programme (MASIP) in agriculture sector as an instrument for prioritising development objectives. The food and Nutrition Security Policy (FNSP) was drawn to provide further framework within which donor activities could operate *(Pratt and Newton, 2005:4).* In addition to the above the Government of Malawi enacted the following policies in relation to labour intensive works *(Plan Group, 2005: 9-11).*

- *Rural Transport Policy (1999)*
- *National Gender Policy*
- *National Environment Policy (1996)*
- *National HIV / AIDS Policy*

One of the tools to be developed to support the implementation should, for example, be in procurement which favours the involvement of local small contractors and local material suppliers for the achievement of social objectives such as employment. (*ASIST Bulletin No 16, 2003:17).* The triennial programme of the inter-urban project in Haiti in 1991, included routine maintenance of unpaved secondary roads by the village communities. ILO provided the Ministry of Public Works with the assistance to rehabilitate roads using Small and Medium Enterprises (SME's) under simplified public works contracts (*Garnier and Imschoot, 1993:29).* The procurement procedures should incorporate social clauses that ensure decent working conditions and standards. South Africa developed a

Code of Good Practices for guiding planners and implementers on labour and health and safety issues which was a reflection of employment act (*ASIST Bulletin No 16, 2003:18).*

4.3.1.2.2 Project need establishment at integrated local level

Planning is essential to ensure that local and national governments, and donors, allocate their resources according to the real needs of rural people, and that the investments made serve these needs. Local planning therefore involves local governments identifying priorities for resource allocation *(Donges, AB 12, 2001:3)*. There are strong general arguments to be made in favour of involving local people in the various stages of an infrastructure programme – including design, project selection and implementation and monitoring. There is a greater likelihood that such projects will meet local needs and circumstances, encouraging greater ownership which in turn positively affects participation rates, as well as the quality and maintenance of the infrastructure produced *(Devereux and Solomon, 2006:11&13).*

There have been many approaches to demonstration of need at local level. *O'Sullivan (1993:222)* and *Yahie, (1996:132 – 136)* argue that where it is possible to base project design on informed and democratically – articulated voices of the poorest of the poor, as is normally the case, the initial project concept should first be subjected to an appropriate form of social analysis. If beneficiary participation is required, Rapid Social Assessment (RSA) is one relatively fast and simple technique that not only reduces the risk of negative outcomes but helps refine and crystallise the project design and also sets the stage for a more participatory mode of project implementation. *Mikkelsen,(1993: 67)and Ncapai, 2005* recommend use of Rapid and Participatory Rural Appraisal (RRA and PRA). Village Action Planning or secondary data had been in use in Malawi (*Devereux and Solomon, 2006:13). Edmond and Johannessen, (2003: 37 – 38*) concluded that whilst each programme of works may have its own tailor-made identification and selection procedures, the process is similar in most cases and passes through a number of stages: identification, screening, appraisal, ranking and approval (see Figure 4-3 above).

Though these procedures vary in complexity according to the function that the improved infrastructure is serving, what becomes clear, however, is that to ensure effective participation,

the procedures need to be simple yet efficient and should not be resource intensive. Identification and selection of rural infrastructure construction or maintenance works, in any case should not be selected in an arbitrary manner. Of all these procedures and approaches, the best practices in labour based infrastructure programmes recommend use of Integrated Rural Accessibility Planning (IRAP).

Integrated Rural Accessibility Planning

The tools developed by the ILO for Integrated Rural Accessibility (IRAP) clearly demonstrate how efficient planning can be carried out at local level *(Johannessen and Edmonds AB 14, 2001:14)* . The ILO has been involved with the development of IRAP in Malawi since 1991, Indonesia in 1995, Cambodia in 1999, Thailand in 2004 and Lao PDR in 1996. IRAP consists of a set of tools which can be used to strengthen existing planning practices. Existing planning systems in use, no matter how rudimentary they may be, are the most sustainable forms of local level planning: they are being used by the local planners. IRAP seeks to strengthen the existing processes by introducing new techniques and procedures which can be integrated with the existing planning procedures to upgrade specific activities such as data collection techniques, mapping procedures, techniques for priority setting*(Bangkok ILO, 2004:17).* IRAP is based on the premise that ease or difficulty of access to basic socio-economic services for rural households determines their well being, and capacity to get out of poverty and isolation. *(RAMPA – Malawi, appendix 1, 2005:2).* IRAP process, for example, Tambon Administration in Thailand has four main steps *(Bangkok ILO, 2004:17; Nejadfard and Edmonds, AB 10, 2000:6)*:

- T1 – Poverty situation analysis
- T2 – Prioritisation and selection
- T3 – Identification and formulation
- T4 – Formulation of project proposal

T 1 - Poverty situation analysis

The aim of situation analysis is to produce a situation analysis that identifies the access problems in the target areas; regarding the mobility of the population and location and

use of services and facilities. The local communities, organisations (government and nongovernmental organisation (NGOs)) and individuals are involved in this process in terms of providing the needed information. Usually, two kinds of data need to be collected for IRAP purposes: primary data and secondary data. Primary data are those collected first hand by an enumerator, in the target areas and focuses on access and transport characteristics such as, use of facilities, travel purposes and travel times. Secondary data, such as population size, agriculture outputs refers to available processed and semi-processed data collected and compiled for a variety of other purposes at local level.

An important element of planning is the prioritisation of geographical areas where access, related to different sectors (water, health, education, markets, transport system, energy) needs to be improved. The main tool for identifying the priorities for improving accessibility are the Accessibility Indicators. Accessibility Indicators show the difficulty or ease with which households have access to goods and services. As an aid to the decision making process, these indicators are objective measurements of the different levels of accessibility for different travel purposes. A separate document, the *Accessibility Profile*, is prepared to briefly describe and summarize the access conditions. The *Accessibility Profile* is more of a descriptive character, more reader-friendly and can be disseminated on a larger scale. It provides aggregate and average conditions. The Accessibility Profile, together with the indicators, will reflect levels of access in the target areas (*Bangkok ILO, 2004:19 – 24).*

T2 - Prioritisation and selection

The larger the value of Accessibility Indicator, the worse is the access problem. The target areas are then ranked / prioritised accordingly. The target area with the worst access indicator in a particular sector gets the highest priority for access interventions in that sector. The access profiles will be presented and the gathered data validated in a training workshop which is participated in by representatives of local authorities, organisations and communities. During the workshop the sectoral objectives for access improvements will be defined. Where national targets exist, these will be used to define

overall objectives, e.g. all households in an area should have direct access to potable water, not exceeding a distance of 500 meters, all year around. The targets should be realistic and attainable, based on the available resources *(Bangkok ILO, 2004:19 – 24; Nejadfard and Edmonds, AB 10, 2000:6)*

T3 - Identification and formulation

The prioritisation exercise described above results in a ranking of priority target areas and the type of access to be improved. The activity however did not yet identify what could be done to improve access or how interventions could best be implemented. For this reason, community representatives need to be invited to a workshop on project identification and design, referred to as the T-3 Training. Local authority staff and sometimes Council members representing the different sectors should also participate in this workshop. The main objective of the workshop is to identify the most appropriate way of intervention and to formulate the development interventions.

Once a target area has been identified as a priority, local authority staff, together with community representatives, needs to identify the types of interventions needed to improve accessibility in a particular sector. If a target is identified as a priority for improving access to a market place for example, the question that remains to be addressed is: what needs to be done to improve access to this particular service? The combined community and local authority staff need to work sector by sector to identify the most appropriate and feasible intervention during the first part of the workshop.

It is important that this identification process is based on the IRAP strategy of having two main categories of access interventions, namely interventions that improve mobility such as roads, bridges, tracks and trails, transport services and low-cost means of transport and interventions that improve the distribution of facilities and services such as water supply, schools, markets and health centres. Therefore, an accurate analysis of the existing situation is important. A good approach to such an analysis for selecting a suitable intervention is to use a Logical Framework *(see section 4.3.2.2).*

(i)Problem Analysis

A part of the problem analysis has already been carried out during the situation analysis (T1) and the prioritisation and selection (T2) and resulted in a set of access problems that needs to be addressed. What has not yet been done is a proper analysis of the causes of these access problems. A thorough problem analysis forms the base of any action to solve a problem. In a problem analysis, cause effect relations are examined. In the analysis the involved parties, community and local authority staff, identify the real access bottlenecks to which they attach priority The analysis is best presented in a diagram showing the effects of a problem on top and its causes at the bottom, such as in the left hand panel. It shows which causes are underlying the problem. When preparing a problem diagram, it is important to break down the main problem into related problems. Very often, one problem can have many causes resulting in a problem tree with many branches. Once the causes of the problem are clear, it is possible to take the next step to consider the possible solutions.

(ii) Objective Analysis

In the preceding section, it was explained how access problems can be broken down into causes and effects. With the problem diagram already prepared, the second step is to formulate an objective. This will in the next turn lead to the identification of an appropriate intervention. During the objective analysis, the negative situation of the problems diagram is converted into 'positive achievements'.

The objective describes the future situation once the problems identified have been solved. For each of the boxes of the problems diagram, the negative essence has to be changed into a positive achievement. The result is a diagram of objectives. It is important to realize that often a choice of actions is available to solve a problem. Some actions appear to be less realistic in a specific situation, others more so. Therefore, a selection needs to be made on the basis of an analysis of different strategies.

(iii)Strategic Analysis

In many cases, a problem can be solved in different ways. In order to select the most appropriate action or combination of actions to solve the problem, it is necessary to analyse the actions first. Different clusters or chains of actions that contribute to a solution can be referred to as a strategy. For example, the problem of limited access to potable water can be solved with the construction of an improved hand dug well, with the construction of a gravity system or with the construction of a bore hole. Each of them are strategies to solve the problem of limited access to potable water.

During the analysis the strategies are compared according to criteria such as the priorities of the population of the target area, the available budget, the available labour and other local resources at village level, the likelihood of success, the local situation, the time frame, etc. For the above example on access to water, this means that the solution of an improved hand dug well would be the best strategy in case the available budget is limited. The improved hand dug well is the cheapest option. It would also be the best strategy in case there is no road access for the drilling machinery and in case of flat land area where no gravity system is viable. After the analysis of problems and formulation of objectives and strategies, one can identify the preferred strategy to be formulated in a project proposal

T4 - Formulation of a project proposal

After identifying the most appropriate and feasible intervention, the combined community and local authority team need to work together to design the project. This could be a simple project write-up or project proposal using a standard template. It is important, however, to include measures that will minimize cost and maximize impact. It is here that the use of local resources including labour, raw materials and products needs to be maximized.

Project design includes the preparation of a cost estimate. It is recommended to use standard specifications, norms and costs to prepare the preliminary project design. Such specifications, norms and costs should be made available prior to the workshop. A short workshop would be sufficient to guide the combined community and local authority team through the project identification process and produce a set of project proposals. The community priorities are the main input for this training. On the basis of a proper problem analysis it should be possible to identify in a relatively short time the most appropriate solutions to existing access problems. Once these solutions and the objectives of a possible project are known, the participants can formulate the activities to achieve the objectives as a project.

Formerly, districts had been using the PRA tools and Village Action Planning or secondary data for development of district socio-economic profiles (SEP) and district development plans (DDP) (*Devereux and Solomon, 2006:13).* The District Development Plans (DDPs) (*Devereux and Solomon, 2006:13*) in Malawi and Botswana *(Francistown DDP no 9)* are called Integrated Development Plans in South Africa *(Mccord, 2003:23).* The integration of IRAP tool into district planning process was tested in Ntchisi (Malawi) in 2005. A*ppendix 2* shows integration points of IRAP into the district planning process. These plans and proposals comprise sector specific interventions or integrated packages including transport and non-transport interventions all aiming at improving rural access. The action plans are submitted to either donors (*phase four)* or included in government annual budgets for funding. Upon identifying the funding of the projects, there are preparation of work plans *(phase three)* for the government funded projects and donor funded projects are screened and prioritised again to meet donor requirements before being accepted in *(phase four)* of the process. The identified projects are then considered and integrated into the overall local development planning system for implementation, monitoring and evaluation *(Nejadfard and Edmonds, AB 10, 2000:9).*

4.3.1.3 Prepare initial Project Concept

When sufficient information from the above processes is considered being collected, an initial project concept proposal is prepared (*Young, 2006:80 and Ministry of Economic Planning & Development (Malawi) Project Planning Manual, (EP&D, PPM) 2005:44)*. In Manufacturing

industry and Process Protocol, this is called initial business case. Most organizations have different standard format for this type of document. The minimum information which can be included in the report by inferring to *Young, (2006:80) and Ministry of Economic Planning & Development (Malawi) Project Planning Manual, (EP&D, PPM) 2005:44)* is:

- Opportunity statement – concise description of opportunity
- Project objectives
- Expected outputs (solutions statement) – concise statement of proposed solution (deliverables)
- Alignment to current on-going activities
- Targeted beneficiaries
- Technology to be used.
- Expected time.

4.3.1.4 Prepare Project Execution Plan

Further examination of the contents of project concept and definitions of process protocol deliverables (chapter 2), the following contextual similarities can be drawn.

Labour based works	Process Protocol
Opportunity Statement	Statement of Need
- Expected outputs - Expected time - Estimated costs - Appropriate technology - Targeted beneficiaries	Execution Plan

4.3.1.5 Summary

The following activities are therefore carried out in the Phase Zero of the Process Protocol for labour based works.

(a) Establish a need for a project

(i) Poverty Situation Analysis

The household surveys are conducted to prepare poverty profiles at National level and accessibility profiles and / socio-economic profiles at local level.

(ii) Develop Development Strategy

From the poverty profiles at national level, national development plans are prepared and the accessibility profiles and socio-economic profiles at local level assist in preparation of action plans at community level and district development plans at local level. The monitoring indicators for national development plans reflect the global development agendas. Those at local level show national norms.

(iii)Creating Enabling Policy and Legislative Environment

At national level decentralization policy and support policy (i.e. gender, rural transport, procurement environment and HIV and AIDS) are enacted to support planning at local level.

(b) Prepare Initial Project Concept

Finally, outline project concept is prepared to operationalise the process. It is made up of the statement of need and the execution plan.

(c) Assess stakeholders

The activities (i) and (ii) above involve a lot of different stakeholders at either national or local levels.

It has, however, been noted that the IRAP processes : T3 – identification and formulation and T4 – formulation of project proposal at local level planning are activities which take place at Phase Two and Phase Three of the management processes of labour based works respectively.

This phase therefore establishes and demonstrates the government's development needs and ensures problems are defined in detail. Some of its objectives are:

- identifying the key stakeholders and their requirements.
- quantify the incidence of poverty in the country
- identify means on how to address the poverty situation
- indicate how the poor will participate in decision making and development
- validate the need/opportunity and make recommendations.

The goals are:

- Establish the need for a project to satisfy the government's development requirements

- Gain approval to proceed to Phase 1

The approval of initial concept proposal means passing through Phase Gate Zero to Phase Gate One where a full and detailed project concept is prepared. The next section *(phase one)* describes the processes of formulating a full project concept.

Table 4-8 gives the processes and deliverables, and Figure 4-4 shows process flow diagram for Phase zero of Process Protocol for labour based works.

Table 4-8: Phase zero processes and deliverables

Processes	**Deliverables**	**Country Experience**
National Level		
Poverty Situation Analysis ▪ Household survey ▪ Construct poverty profile	Poverty Profile	Uganda Ghana Malawi Namibia
Create Enabling Environment	▪ Decentralization Policy ▪ Support Policy	Ghana Malawi Kenya Madagascar
Prepare National Development Plans	▪ National Development Plans ▪ Poverty Reduction Strategy Paper	Ghana Malawi Botswana Namibia
Prepare Project Concept	Project concept (Initial)	Malawi
Prepare statement of Need	Statement of Need (Initial)	
Prepare Execution Plan	Execution Plan (Initial)	
Prepare Stakeholder List	Stakeholder List (Initial)	
Processes	**Deliverables**	**Country Experience**
Local Level		
Poverty Situation Analysis ▪ Household survey ▪ Construct poverty profile	Accessibility Profile / Socio- Economic Profile (SEP)	IRAP process in Tambon Administration – Thailand, Lao PDR, Cambodia, Malawi.
Prepare District Development Plans	▪ District Development Plans	

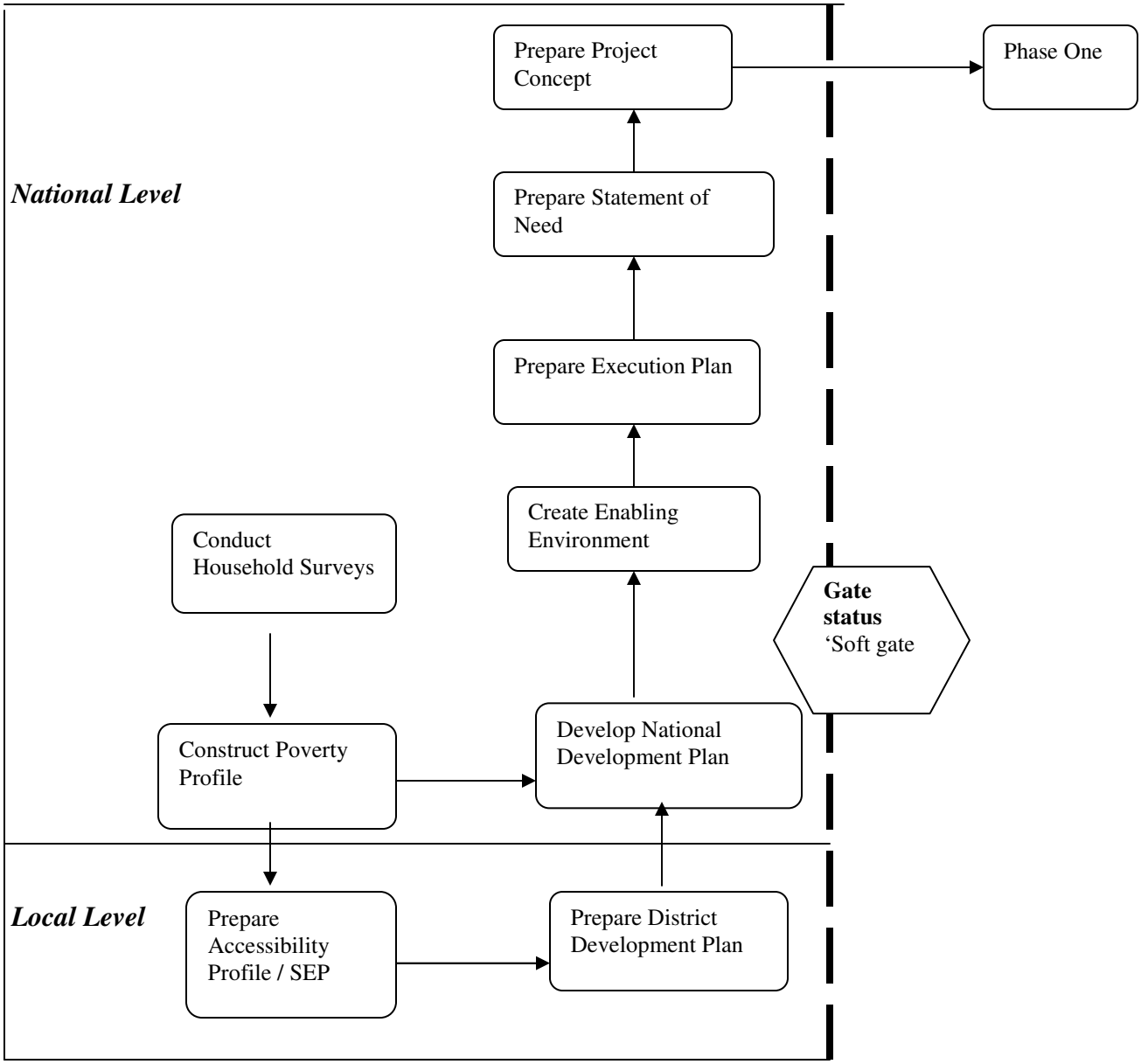


Figure 4-4: Phase zero process flow diagram

4.3.2 Phase One - Conception of Need

4.3.2.1 Introduction

The information collected from needs assessment *(phase zero)* is useful in developing a conception of need (project concept). A project concept clarifies the relationship between the intervention strategies, the expected results and goal of the project by demonstrating the theoretical link between them (Arbab*, 2008).* The aim of this section is to discuss the management processes of labour based works based on the processes of Phase one of the Process Protocol (Appendix 1). These processes are:

- Prepare Project Brief
- Revise Business Case
- Revise Project Execution Plan
- Prepare Design Brief
- Assess Site and Environment

According to *Cusworth and Franks, (1993:6) and Byrant and White (1982:117)*, this phase is also called formulation phase. At this stage additional information, consultations and input from local officials, professional, and members of the public are required. Procedures to meet the needs are designed. It involves the definition of alternatives for the project, followed by the selection and planning of optimum alternative. Since project formulation requires specifying the arrangements for implementation, an organizing device can be useful.

" This device is often referred to simply as the logframe (logical framework), which is described here not because it is unique but because it exemplifies a useful technique in the process of the project design"

The logical Framework Approach is used to analyse the problems and work out a suitable solution i.e. project design (*PCM / EC, 2001)*

4.3.2.2 The Logical Framework

The logical framework approach (LFA) was developed by United States of America International Development Agency (USAID) during the late 1960s to assist in the planning, management and evaluation activities. It has since been adopted as a planning and management tool by large number of other agencies involved in providing development assistance. These

include the British Overseas Development Agency (ODA), Canadian International Development Agency's (CIDA), the International Service for National Agriculture Research (ISNAR), and Germany's Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) (*EP&D- PPM , 2005: 4-7).*

The logical framework method is a way of structuring the main elements in a project, highlighting logical linkages between intended inputs, planned activities and expected results. The LFA has also introduced 'external factors' assumptions and risks into planning process (*Mikkelson, 1993:48)*. The LFA is a way of describing a project in a logical way so that it is well designed, described objectively, can be evaluated and clearly structured (*Bond Guidance Notes Series No 4)*

According to *Byrant and White (1982:119)*, the technique has three major advantages.

- assists designers in coming to some agreement about skeletal framework of the project
- assists in measuring achievement at regular intervals during implementation
- can be used later in the project cycle to begin the evaluation process.

Bond Guidance Notes Series No 4 stated that the log frame isn't intended to show every detail of the project, or to limit the scope of the project. It is simply a convenient, logical summary of the key factors of the project. Though different donors use slightly different terminology, but the logical frameworks are all the same in principle, some of the terminology involved in LFA is:

Table 4-9: LFA Terminology

TERM	MEANING
Narrative Summary (Intervention logic)	The goal, purpose, outputs and activities of the project as described in the left-hand column of the logical framework. (the Objectives column)
Goal(Overall objective)	The ultimate result to which your project is contributing - the impact of the project.
Purpose	The change that occurs if the project outputs are achieved - the effect of the project.
Outputs / Results	The specifically intended results of the project activities - used as milestones of what has been accomplished at various stages during the life of the project
Activities	The actual tasks required producing the desired outputs.
Indicators	Also referred to as measurable or objectively verifiable indicators (OVI) quantitative and qualitative ways of measuring progress and whether project outputs; purpose and goal have been achieved
Means of Verification	M.O.V is the information or data required to assess progress against indicators and their sources.
Assumptions	Factors external to the project which are likely to influence the work of the project management that has little control, and which need to exist to permit progress to the

	next level in the LFA.
Super goal	The long-term results of continued achievement of the goal of the project.
Inputs(Means and costs)	What materials, equipment, financial and human resources are needed to carry out the activities of the project?

The six main processes for drawing up logical framework (as discussed below) (*Yahie, 1996; Mikkelson, 1993; PCM / EC, 2001),* are:

- Stakeholder Analysis
- Problem Analysis
- Analysis of Objectives
- Analysis of Strategies
- Building the logframe
- Quality factors analysis

4.3.2.2.1 Stakeholder analysis

A first step in the identification of problems and needs is the stakeholder analysis. Stakeholders are those who directly or indirectly become involved in deciding what a project or programme should achieve and how it should be achieved. They may involve beneficiaries, project or programme staff and management at local, regional, national or international levels, researchers, government agencies and donors. Effective and efficient project cycle management requires a participatory approach, involving all stakeholders, in all project cycle phases and especially in decision-making.

A truly participatory approach will strengthen responsiveness and provide a sense of ownership, which will contribute to the likelihood of achieving the project's objectives. When people become committed this contributes to sustainability. Using local knowledge and skills might strengthen efficiency and avoid mistakes. When stakeholders are given sufficient information and decision-making power, then transparency and accountability improves as people are informed about what and why, and have a specific responsibility in the project ((http://www.networklearning.org/library/task,cat_view/gid,50/). Table 4-10 provides an example of a stakeholder analysis for a feeder roads project.

Table 4-10: Feeder Roads: Stakeholder Analysis

Stakeholder	***Characteristics*** ▪ ***Social Economic*** ▪ ***Gender differentiation*** ▪ ***Structure, organization, status*** ▪ ***attitudes***	***Interest and expectations*** ▪ ***Interest, objectives*** ▪ ***Expectations***	***Sensitivity to and respect of cross-cutting issues (environment, gender, etc)***	***Potentials and deficiencies*** ▪ ***Resource endowment*** ▪ ***Knowledge, experience…*** ▪ ***Potential contribution***	***Implications and conclusions for the project*** ▪ ***Possible action required*** ▪ ***How to deal with group***
Government, ministry of planning and finance, national level.	- highly centralized decision of allocation of resources - Road sector is not a priority	- Enhanced social and economic development - clear objectives for the road sector that fit national framework - better quality of construction and rehabilitation works	- EIA is part of policy and should be done for each new road / upgrade	-committed to take leading and fulfil obligation, together with relevant ministries - Well staffed and equipped -contribution: planning capacities	- take advantage of planning capacities of ministry of finance and planning in the clarification of transport policy. - support, review of centralized planning and allocation of resources
Private vehicle owners (private road users	- Middle and upper class owners, about 70% male and 30% female drivers - represented by National Automobile Federation	- save and fast journeys overland - Reduction of cost - Fewer accidents	- can probably be sensitised to environmental issues - maintenance of vehicles often neglected	- contribution higher tolls	- sensitisation with regard to environment issues - collaboration with National automobile Federation
Farming families / communities	- very heterogeneous - Women do marketing of agricultural products, small scale, more perishable	- transport as quick as possible, at reasonable prices, mainly for agricultural products - government to maintain primary and secondary roads.	- Little awareness of possible pollution through transport and change of lubricants	- contribution: participation in maintenance teams - will have to pay more tolls when marketing - men dominate village organizations	- sensitise them to provide contribution to maintenance teams - contribution of men and women should be differential, otherwise costs will be higher for women
Road maintenance firms	10-12 small to medium size firms (20 – 50 employees most operating regionally. - National owners	- more contracts - less complaints about quality	-mostly: patches of biotapes are respected during construction - little awareness of causes of HIV / AIDS, and of impact of workers behaviour	- capital: weak (mostly) - most of them only working since 5-10 years - contribution: recruitment of more local staff for rehabilitation	- awareness to raise with regard to recruitment of local and female staff. - more close monitoring of works.

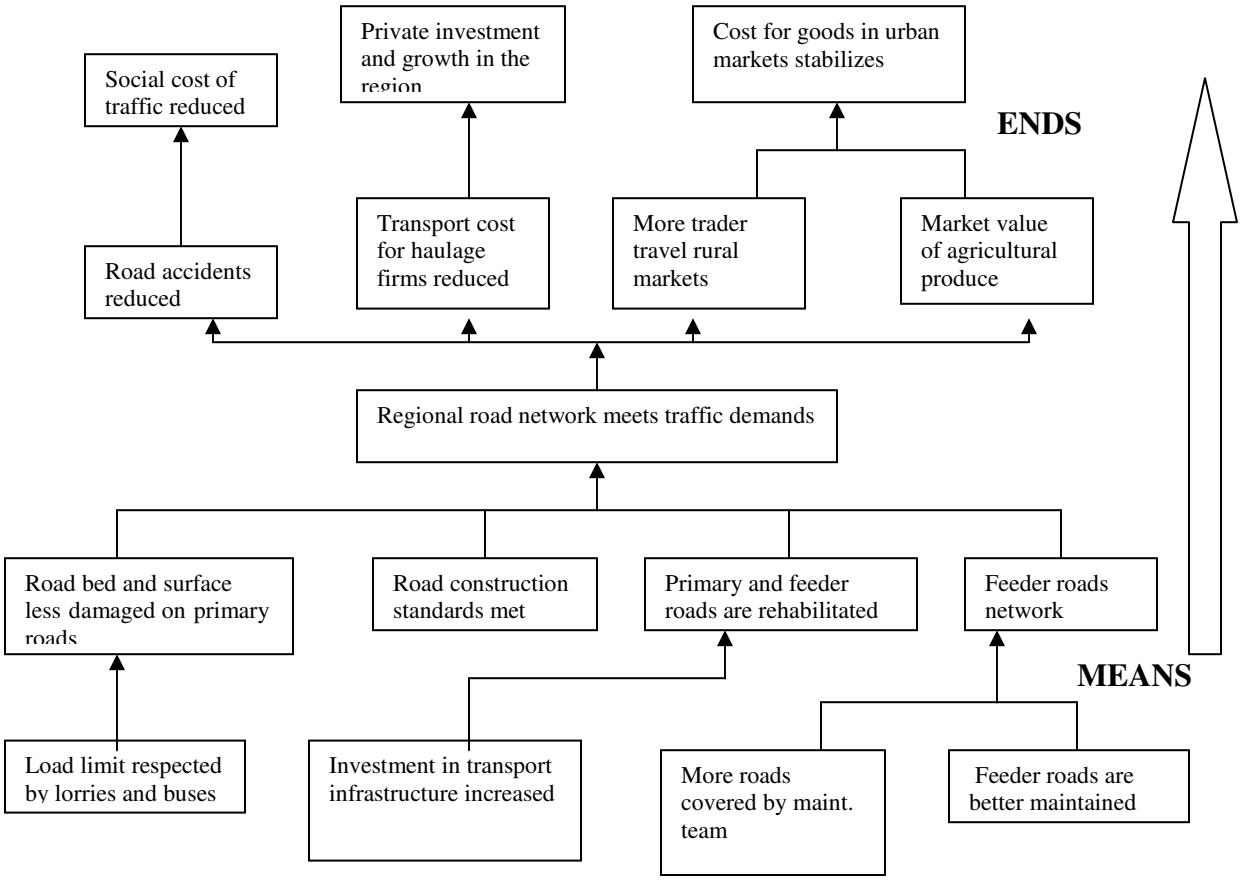
Source: Project Cycle Management Manual – EU 2001:11

4.3.2.2.2 Problem analysis

Once needs and problems have been identified, then the next step is to analyse them. No problem exists by itself; it is always part of a cause-and-effect chain of problems and these causes and effects have to be identified in order to plan well. An exercise often used is to draw the problem tree, from which project objectives can be derived. This exercise is described in *Tearfund's Project Cycle Management tools* and in chapter 4.1 of *Europe Aid's Project Cycle Management Handbook* (http://www.networklearning.org/library/task,cat_view/gid,50/).The problem tree represents a comprehensive picture of the *existing negative situation:* The impact of this type of diagram is often greatest if it is prepared at a workshop of those concerned (who therefore know the situation) led by a person who understands the group's dynamic and is experienced in the method (a moderator). This approach can be combined with others such as technical, economic or social studies, the results of which may complement the analyses of the group (*PCM / EU 2001)*

4.3.2.2.3 Analysis of objectives

To describe a future situation that will be achieved by the resolution of one or more of the problems identified. The hierarchy of problem described in the problem tree will be transformed into a hierarch of objectives or an objective tree. The 'negative situations' of the problems tree are converted into solutions, expressed as 'positive achievements'. These positive achievements are in fact *objectives*, and are presented in a diagram of objectives (Figure 4-5) showing a means / end hierarchy. This diagram provides a clear overview of the desired future situation *(PCM /EC, 2001; O'Sullivan, 1993:222;Yahie, 1996:135).*



Source: Europe Aid's Project Cycle Management Manual, 2001:15

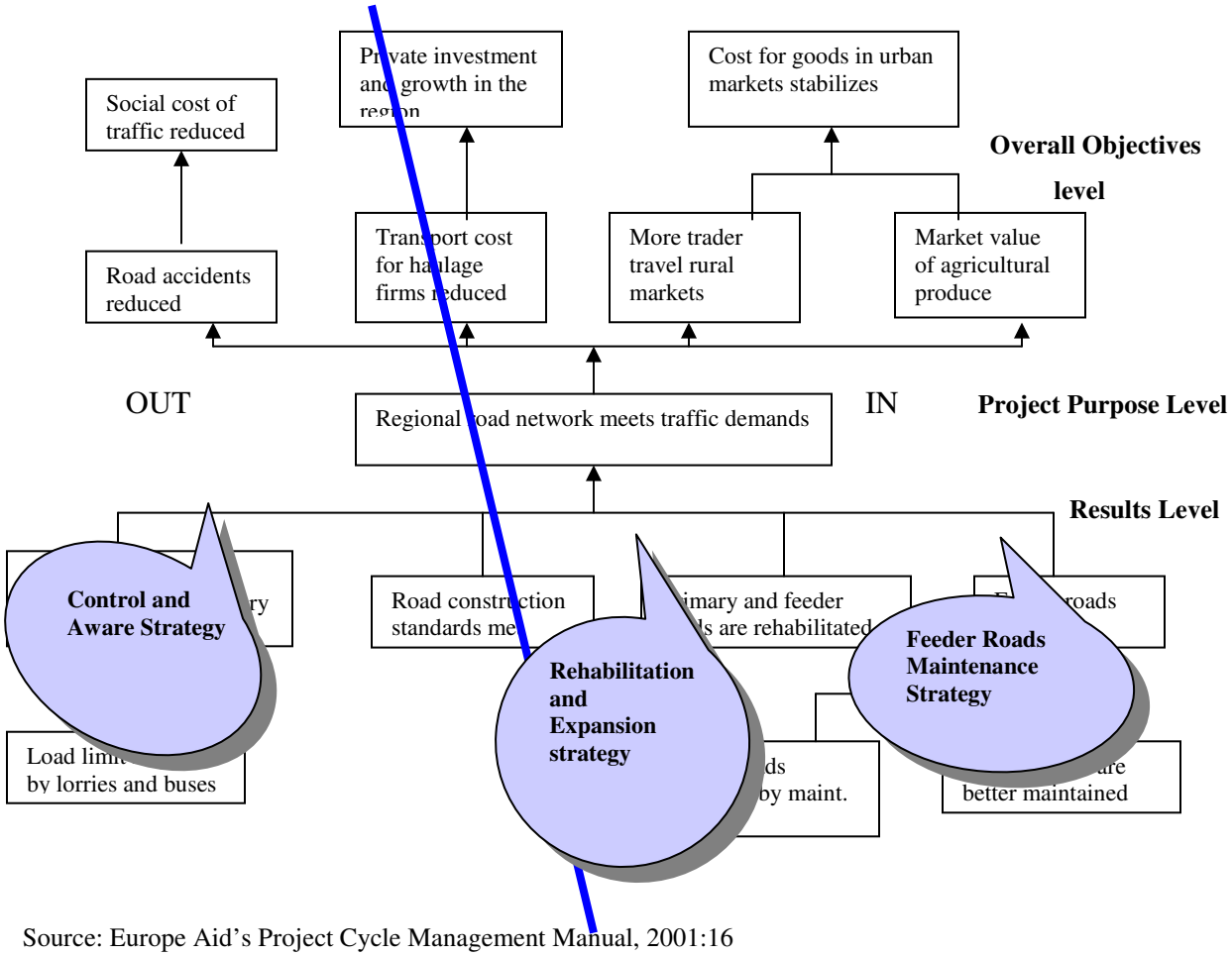
Figure 4-5: Objective Tree

4.3.2.2.4 Analysis of strategies

The final step of the Analysis Stage involves selecting the strategy (ies) which will be used to achieve the desired objectives. Strategy analysis involves deciding what objectives will be included IN the project, and what objectives will be excluded OUT, and what the project purpose and overall objectives will be. This step requires:

- Clear criteria for making the choice of strategies
- The identification of the different possible strategies to achieve the objectives
- The choice of the project strategy

In the hierarchy of objectives, the different clusters of objectives of the same type are all called strategies. One or more of them will be chosen as the strategy for future operation. The most relevant and feasible strategy is selected on the basis of a number of criteria, for instance: priorities of stakeholders (both women and men), likelihood of success, budget, relevance of the strategy, time required, contribution to reducing inequalities, including gender inequalities. Depending on the scope and amount of work entailed, the selected clusters or strategy may form a 'project-sized' intervention, or a programme consisting of a number of projects *(PCM /EC, 2001; O'Sullivan, 1993:222; Yahie, 1996:135).*



Source: Europe Aid's Project Cycle Management Manual, 2001:16

Figure 4-6: Analysis of Strategies

4.3.2.2.5 Building the Logframe matrix

The logical framework is a way of presenting the substance of a project / programme in a comprehensive and commonly understandable form. The matrix has four columns and four rows (Table 4-12)

- The *Vertical logic* identifies what the project intends to do, clarifies the causal relationships and specifies the important assumptions and uncertainties beyond the project manager's control.
- The *horizontal logic* relates to the measurement of the effects of, and resources used by, the project through the specification of key indicators, and the sources where they will be verified.

The terminology for LFA has been defined in Table 4-9. *Bond Guidance Notes Series No 4* proposed a three stage strategy of building the logframe. The three stages to success are:

- Stage one - top down (objectives)
- Stage two - work across (measurable indicators and means of verification)
- Stage three - bottom up (assumptions)

Table 4-11: Summary of steps in building logframe

(a) Stage One - Top Down (Objectives)	(b) Stage Two - Work Across (Measurable Indicators and Means of Verification)	(c) Stage Three - Bottom Up (Assumptions)
(i) Goal / Overall objective Starting at the top and using the information from the Objective Tree consider the overall goal of the project. What issue or problem is the project trying to address? The goal may be beyond the reach of this project on its own. What ultimate objective is the project contributing to? This should be a brief statement or summary. **Example** Supply, of urban markets, with agriculture produce from the regional stabilized. **(ii) Outputs / Results** Results are "products" of the activities undertaken, the combination of which achieve the Purpose of the project, namely the start of enjoyment of sustainable benefits by the target groups. What are the particular outputs needed to achieve the Purpose of the project? There may be several outputs. **Example** ▪ Feeder roads are rehabilitated ▪ Quality of feeder roads network is increased **(iii) Activities** List the activities, which are needed to achieve these outputs. There may be several for each output. Statements should be brief and with an emphasis on	**(i) Objectively Verifiable Indicators** Starting either from the top or the bottom of your hierarchy of objectives, begin to work across the log frame, identifying the indicators for measuring your progress. Indicators need to define 'QQT' - Quality, Quantity and Timing and target group. The indicators may be process indicators - which measure the extent to which you have achieved your stated objectives or impact indicators which help to monitor the achievement and the impact of your work. **(ii) Means of Verification** Sources of verification indicate where and in what form information on the achievement of the Overall Objectives, the Project Purpose and the Results can	**External factors** External factors could affect the success of project or prevent work from progressing. These may be climatic, political, economic, etc. but should be real (possible) risks rather than a list of everything that could go wrong. These will affect the project's implementation and long-term sustainability but lie outside its control. These conditions must be met if the project is to succeed, and are included as assumptions in the fourth column of the Logframe. Reflecting up from the bottom of your log frame, consider how, if each assumption holds, it will be possible to move to the next stage of the project.

action words. **Example** ▪ Identify feeder roads to rehabilitate ▪ Improve collection of road tolls and taxes **(iv) Inputs** When required to do so provide additional information, such as the inputs which are needed to carry out these activities. Again, there may be several for each activity and it will help to run through each individually, listing required inputs (resources, equipment, tools, people). Group the inputs and list each once rather than repeatedly. This may include a summary of the project budget. **Example** Budget, Training space, Accommodation, Support for existing teaching staff, Teaching materials, Transport to village, Project Co-ordinator / Fieldworker etc.	be found (described by the objectively verifiable indicators). The costs and sources of financing are placed in the bottom row of the third column.	

From the processes described above, a logframe can be built. Table 4-12 shows the logframe sample for Income generating Public Works Programme in Malawi *(Pratt and Newton, 2007)*. The matrix shows the most important aspects of a project in a logical format. A critical analysis of *quality factors* enables adjustments to the project purpose, results, activities, assumptions and indicators.

Table 4-12: IGPWP Logical Framework

INTERVENTION LOGIC	OBJECTIVELY VERIFIABLE INDICATORS	SOURCES OF VERIFICATION	ASSUMPTIONS
OVERALL OBJECTVE To contribute to the GOM Poverty Reduction	▪ Household income ▪ GDP per capita	▪ Malawi statistics.	
PROJECT PURPOSE To enhance the socio-economic situation of the rural / peri-urban population through improving accessibility, infrastructure and promotion of productive activities within rural / peri-urban and by creating linkages to economic activities	▪ Increase in household assets ▪ % of produce sold ▪ Increase in food supply	▪ Baseline survey ▪ Monitoring reports ▪ Impact studies	▪ Macro-economic and political stability will and commitment ▪ No new emergency situations ▪ No major droughts or floods occur during the programme period
RESULTS **1.** Rural roads and small bridges are upgraded and rehabilitated 2. Rural roads are maintained 3. Productive local agriculture activities are developed through improved inputs and irrigation 4. implementation capacity of district assemblies is enhanced**.**	▪ Length of rural roads upgraded and rehabilitated (2,246km) ▪ No small bridges upgraded (70no) ▪ Income earned from road works by local communities (MK500m) ▪ No. trees planted (35.5 million) ▪ Percentage of women employed (30%) ▪ Percentage of youth employed (10%)	▪ Contractors employment report ▪ PMU monthly programme status reports ▪ Attendance registers ▪ Interim and final evaluation reports ▪ MC monitoring reports	▪ There are sufficient rural roads in need of upgrading / rehabilitation within the district assemblies targeted ▪ There are sufficient local contractors with the requisite skills to undertake the road construction ▪ Local village force is available ▪ There are sufficient skilled local designers / project mangers to oversee planning and implementation
ACTIVITIES 1**. Rural roads and small bridges are upgraded and rehabilitated.** 1.1 identify and prioritise local needs and rural roads to be upgraded 1.2 Assess conditions of prioritised roads 1.3 Tender and contract roads contractors 1.4 implement upgrading / rehabilitation employing local labour 2**. Rural Roads are maintained** 2.1 Establish village road maintenance clubs. 2.2 Implement road maintenance	**Means** ▪ Labour intensive construction via local contractors ▪ PMU management and support ▪ MC monitoring reports ▪ Village clubs using labour intensive methods ▪ MC monitoring reports	**Costs (Euro)** ▪ Works – 10,010,000 Works – 1,495,000	

IGPWP Logical Framework in Malawi (Pratt and Newton, 2007)

4.3.2.2.6 Quality factors analysis

The external factors *(Mikkelson, 1993:48)* are also called quality factors in *PCM / EC 2001.* Having established the intervention logic (first column) and the assumptions (fourth column), the preparation of the logframe continues with a review (questions) concerning the project / programme's quality. A project can be said to be sustainable when it continues to deliver benefits to the project / programme target groups for an extended period after the main part of the donor / government assistance has been completed. In the past it has been found that projects have failed to deliver sustainable benefits because they did not take sufficient account of a number of critical success factors. Quality is not an issue only to be considered shortly before the end of a project, but should be kept in mind from the planning stage onwards. Experience has demonstrated that the longer-term sustainability of project benefits depends on the following factors:

a. *Ownership by beneficiaries* - the extent to which target groups and beneficiaries of the project / programme (including men and women) have participated in its design and are involved so that it can have their support and be sustainable after the end of the financing.

b. *Policy support* - the quality of the relevant sector policy, and the extent to which the partner government has demonstrated support for the continuation of project services beyond the period of donor support.

c. *Appropriate technology* - whether the technologies applied by the project can continue to operate in the longer run (e.g. availability of spare parts; sufficiency of safety regulations; local capabilities of women and men in operation and maintenance).

d. *Socio-cultural issues* - how the project will take into account local socio-cultural norms and attitudes, and which measures have been taken to ensure that all beneficiary groups will have appropriate access to project services and benefits during and after implementation.

e. *Gender equality* - how the project will take into account the specific needs and interests of women and men and will lead to sustained and equitable access by women and men to the services and infrastructures, as well as contribute to reduced gender inequalities in the longer term.

f. *Environmental protection* - the extent to which the project will preserve or damage the environment and therefore support or undermine achievement of longer term benefits.

g. *Institutional and management capacity* - the ability and commitment of the implementing agencies to deliver the project / programme and to continue to provide services beyond the period of donor support.

h. *Economic and financial viability* - whether the incremental benefits of the project / programme outweigh its costs and the project represents a viable solution.

4.3.2.3 Prepare a Detailed / Full Project Concept

During the step- by- step exercise above, sometimes called LFA workshop, the participants reach a common understanding of the problem to be addressed, how and under what constraints. Not only are local stakeholders represented in the LFA workshop, but the LFA workshop is also multi-disciplinary event. The inputs from people of different disciplines contribute to broader analysis of the situation (*Mikkelson, 1993).* After the logframe matrix has been completed, a full project concept is prepared *(EP&D, PPM, 2005:4-11).* The full project concept describes often quite broadly, what activities are to be undertaken with incorporation of quality factors. According to *EP&D, PPM, (2005:4-11),* a full project concept may include the following contents which are part of data gathered during the logframe formulation.

- Origin / background
- Existing situation and major constraints
- Other related activities (projects / programmes)
- Alternative options considered
- Goal and objectives
- Summary of inputs

- Arrangements of implementation
- Proposed approach to monitoring
- Expected benefits, impact and risks

Annexed to this document is the logframe matrix summary and terms of reference for feasibility studies.

4.3.2.4 Prepare a Project Brief

From the business case (full project concept above), a project brief is derived. There is no amendment necessary as a result of consulting with any other stakeholders which might have been identified (*Young 2003:1001).* Furthermore Young (2003:101) suggested the template for a typical one-page document to contain the below subheadings.

- Project title
- Overall objective of the project
- Project manager and project sponsor
- Planned start date for the project
- Required finish date
- Relationship with other active projects
- Project cost
- Risk management
- Project deliverables
- Project benefits
- Project strategy
- Project skills required

4.3.2.5 Summary

The review of Phase one – Conception of Need of the Process Protocol for labour based works has shown that the initial statement of need becomes increasingly defined and developed into a structured brief. All the project stakeholders needs are identified and their requirements captured. The purpose of this phase is to highlight logical linkages between intended inputs, planned activities and expected results. It entails selection and planning of an optimum solution.

The goals of phase one include:

- Identify potential solutions to the need and plan for feasibility (phase two)
- Gain authority and financial approval to proceed to phase 2

The Logical Framework (full project concept) describes often quite broadly, what activities are to be undertaken with incorporation of quality factors. After the logframe matrix has been completed, usually during the formulation of *'work plan* '(phase three), further planning can take place to add operational detail to the plan. At this stage means and costs are thus not specified for the activities in the logframe but may be specified later when preparing an activity schedule. Both activity and resource schedules ought to be drafted during the feasibility study (phase two). The next phase discusses the processes under feasibility study. Table 4-13 indicates phase one processes and deliverables, and Figure 4-7 shows phase one process flow diagram.

Table 4-13: Phase one process and deliverables

Processes	Deliverables	Country experience
(a)Formulate the Logical Framework ▪ Stakeholder Analysis ▪ Problem Analysis ▪ Analysis of Objectives ▪ Analysis of Strategies ▪ Building the logframe (c) Prepare the Full Project Concept (d) Prepare Project Brief (e)Assess environmental issues *(see section 4.3.2.2.6)*	Stakeholder List (final) Statement of Need (final) Project Overall objectives List of Strategies Logframe Matrix (initial) Project Concept (updated) Project Brief (initial)	**Malawi** - GoM / EU PWP - IGPWP **South Africa** - Extended Public Works Programme (EPWP)
From the project concept above - Project deliverables - Project benefits - Project strategy - Project skills required - Project cost	Project Execution Plan (updated)	

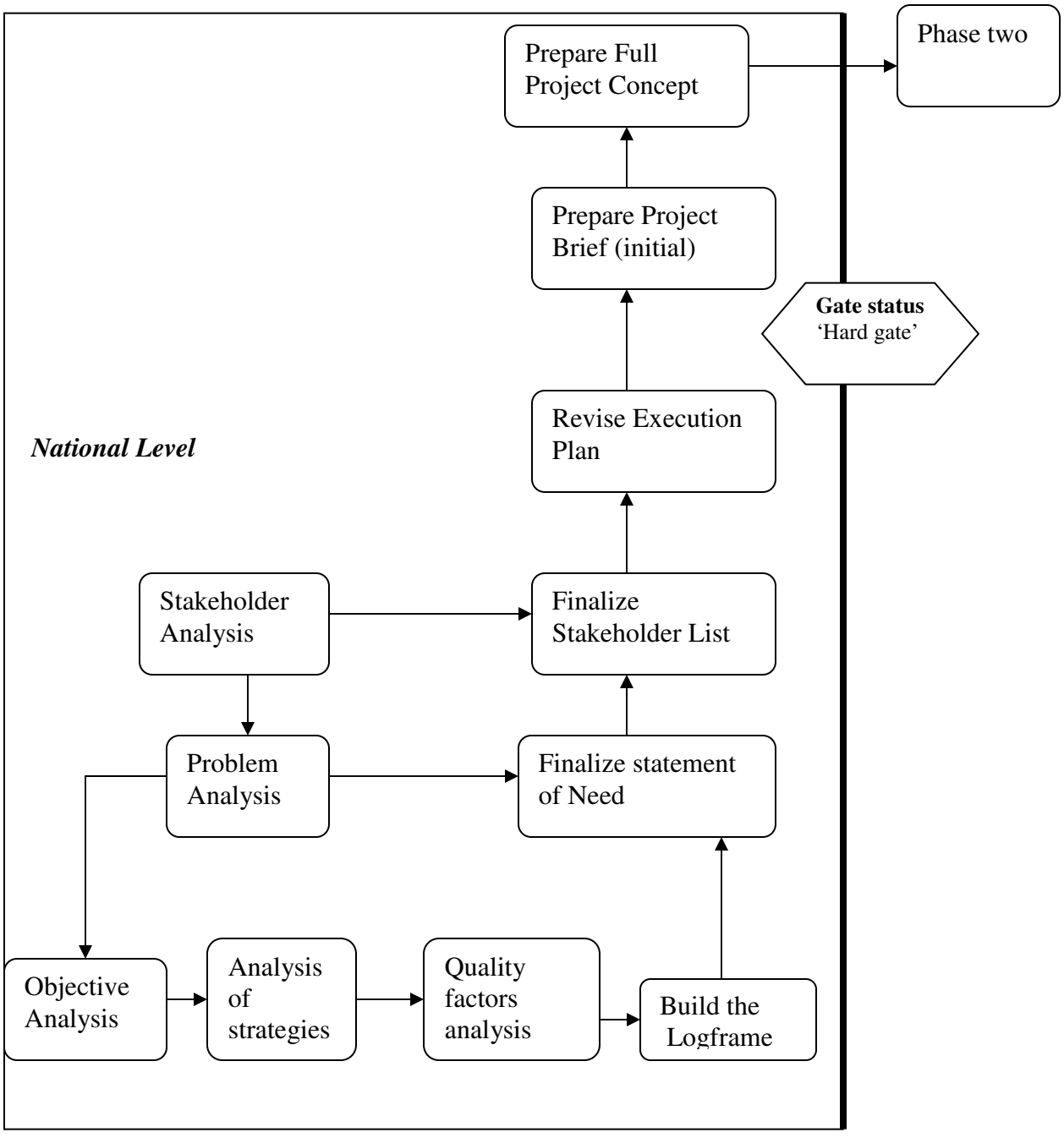


Figure 4-7: Phase one process flow diagram

4.3.3 Phase Two - Feasibility Studies

4.3.3.1 Introduction

The next step after problem definition (phase zero) and project concept (phase one) is to determine how feasible a project is and how it compares with alternatives (*Bryant and White, 1982:119*). Traditionally, the feasibility study is a set of multidisciplinary works for defining and assessing a project so that the decision to carry it out can be taken (Cano*, 1992).* From the literature, it is evident that phase two and phase three of the Process Protocol have been merged into one phase and is also called feasibility studies. *EP&D PPM, (2005:3-4)* argues that a pre-feasibility study (phase two of the Process Protocol) be required for large and / or complex projects which are assessed having significant potential merit and are consistent with national / sectoral objectives, but which are difficult to appraise from the details in a project concept. According to *Pratt and Newton, (2007)* in Malawi, a feasibility study was conducted in 1999 for the GoM / EU Public Works Programme (PWP) which included an economic and financial analysis that indicated both a positive internal rate of return and benefit cost ratio. *Muatjetjeja, (2006:40)* reported feasibility study in Botswana on labour based works project.

"The project employed 630% more men than the 70 – 80 men that the feasibility studies had estimated would avail themselves for work".

Johannessen conducted feasibility studies in Lao People's Democratic Republic (PDR) in 1996 and another one for Smallerholder Development Project in 2002 in Lao PDR.

This section will discuss feasibility studies for labour based works basing on principles and procedures from Overseas Road Note 5 (Guide to road project appraisal) and the experiences from Lao (1996), Jabalpur District in India (2002) and Central Region Infrastructure Maintenance Program (CRIMP) project (2000) for Dedza and Lilongwe Districts of Malawi. The management processes to be undertaken will be described first and then a summary will follow. The objective is to investigate the processes using the activities in the Process Protocol (Appendix 1) for Phase two and Phase three.

- Undertake Feasibility Study
- Revise Business Case
- Revise Project Brief

- Revise Execution Plan
- Assess Site and Environment Issues
- Prepare Procurement Plan
- Prepare Concept Design Brief
- Define System and Criteria
- Inform Statutory Criteria and Regulatory Issues
- Prepare CDM Assessment.

The following seven steps are required in setting up a feasibility study: appoint the feasibility study team, scope the study, evaluate the existing situation, design and cost different options, cost / benefit analysis of alternatives and determine project selection criteria.

4.3.3.2 Appoint the feasibility study team

It is a senior management responsibility to select the project manager or team leader for the feasibility study *(Burke, 2001:37).* The make-up depends on the nature of the project. For the feasibility study, it should include technical, financial and marketing expertise, and for larger projects may also have economists, legal and environmental experts, human resources experts *(Turner, 1999:274).* India's feasibility study for labour based works *(Vaidya, 2001:51)* required a civil engineer/rural development economist with:

- a solid working experience in the rural infrastructure development sector
- minimum five years experience in labour based rehabilitation and maintenance projects
- experience in developing strategy, programme and project documents for the rural roads sector.
- ability to communicate effectively at all levels in relation to the formulation and presentation of a strategy document for the rural roads sector.

4.3.3.3 Scope the study

Examine the scope of the study to assess the work involved and any constraints imposed (quality, time and cost). The project's objectives must be reviewed to provide the basic framework for analysis. Within this framework, a range of alternatives should be considered. For each, it is necessary to assess the needs, determine physical resources and costs, and predict benefits in order to compare alternatives *(Overseas Road Note 5, 1988:6).* Though the needs analysis might

have been considered during the project conception and needs assessment phases, at this stage however the needs have to be thoroughly interrogated and where necessary amended to reflect the project's alignment with institution's policies, priorities, commitment and capacity; scope of the project, the outputs and expected stakeholders to be interacted with during the implementation phase. Table 4-14 shows an objective framework for a feasibility study which was undertaken for CARE International in Malawi (*Johannessen, 2000: 10).*

Table 4-14: Objective framework for a feasibility study

Objective framework for CARE International (Malawi)

The purpose of the feasibility study was to develop systems for sustainable and cost effective rural feeder road rehabilitation and maintenance that directly contribute to improved household livelihood security in selected Traditional Authorities in the Central Region of Malawi. The project aimed to pilot the development of a network of small scale contractors and develop a sustainable system for rural road works that was both cost effective and efficient. CARE International in Malawi received funding from the Department for International Development (DfID) for the Central Region Infrastructure Maintenance Programme (CRIMP) to be implemented in Lilongwe and Dedza Districts.

In the past the force account model had been the general model adopted by most local authorities in Malawi, whereby, as a public agency, it carried out all aspects of construction, supervision, management, as well as the control of equipment, materials, and labour. The establishment of a cadre of independently operating local contractors, engaged by the district road authority to maintain and rehabilitate rural feeder roads, was one means of contributing to the implementation of the reforms currently taking place in the road sector. An approach that focused on the development, and use of, local contractors aimed to strengthen the capacity of the district road authority in its new role as contract manager, with responsibilities for the tendering, supervision and certification of road works. The end result would be a district road authority that was able to devote more energy to the quality of road maintenance and rehabilitation with greater overall output.

Working closely with the National Road Authority, Ministry of Local Government, the district road authorities and the National Construction Industry Council, CARE would assist with the identification, training and mobilization of emerging small-scale contractors. These "firms" would be trained alongside district level supervisory staff in labour based rural road maintenance and rehabilitation skills.

4.3.3.4 Evaluate existing situation

Experience is the best teacher. Before determining alternative ways of meeting the above objectives, current practices have to be reviewed. Review of the current practices is used to define and understand the current method of implementation. The strengths and weaknesses of the current approach are identified. For the design of effective labour based works programme, it would be imperative to investigate the extent of use of such practices in a country or particular area. Problems associated with the use of labour have to be noted on the outset. The aspects to be investigated include the availability and willingness of people to work, quality of work performed, methods employed, type of work executed, institutional capacity on labour based works tools and equipment provided for the works and availability of local resources. The discussion below isolates issues that are considered in review of current practices. The sample is based on the work by *Johannessen, (1996)* which was conducted in Lao PDR for use of labour based technology on a road project.

Table 4-15: Situational analysis for labour based works in Lao PDR

	Current method of implementation / strengths / weaknesses
General experience with labour based work	Labour-based road works technology is not a new technology in Lao People's Democratic Republic (PDR). In the 1970s when the country received assistance from the People's Republic of China and Vietnam to construct some 900 km of paved roads in the northern provinces (National Roads 1, 4, 6 and 7), labour-based construction methods were widely used. During the second half of 1980s, two labour based road projects (LAO/83/001 and LAO/87/003) were carried out in the provinces of Xiengkhuang, Houaphan and Vientiane with financial support from UNDP and technical assistance provided by ILO. In 1991, in the SIDA Pilot Maintenance Area, trials were made to develop suitable methods for routine road maintenance and rural road rehabilitation. The routine maintenance was organized on a length man basis to carry out pothole patching, drainage clearing and bush cutting on a gravel road. The road rehabilitation works were carried out on Road No. 207 through Naphok village. In the UNDCP Xiengkhuang Highland Development Projects, there was a large component of labour based road works. During 1992-1994, about 58 km of rural roads were built in hilly and mountainous areas to provide access to hill-tribe villages as part of an anti-opium growing scheme.
Labour supply and payment	Sufficient labour-supply had always been a key issue in discussions relating to the feasibility of labour based technology in Lao PDR. However, it was clearly proven that even in remote areas where population densities were comparably low, it was still possible to recruit sufficient labour. On the SIDA Pilot Maintenance Area an average workforce of 40 workers were

	recruited from the village to cut bushes, excavate side drains and construct a camber. 2,300 workers were employed in a month period on the UNDCP Xiengkhuang Highland Development Projects, where there was manual breaking of rock to provide hard surfacing since good quality soil aggregate was not available in the nearby vicinity. Labour was reported to come from villages as far as 10 km away to camps near the road site. The total construction cost was approximately 14,000 US$/km of which 80% were labour costs. The wage rate adopted was 1.4USU$ / day.
Government commitment and capacity	Investigating the capacity of the government is very vital at this stage of the project. During the feasibility study in Lao, it was found that the Government had delegated the responsibility for routine maintenance of national roads to the provinces. Starting in 1996, a separate budget item allocated funds to the provincial departments of Ministry of Communication, Transport, Post and Construction (MCTPC) to carry out routine maintenance. Furthermore, it was decided that most work would be carried out using labour-based methods, recruiting local labour from the areas through which the roads were passing. Three projects were initiated which aimed at assisting the MCTPC and the provincial and district authorities in strengthening the organization and operation of maintenance of provincial and local roads in rural districts. These were ADB Rural Feeder Road Maintenance Training Project, KfW Village Based Routine Road Maintenance on RN 6 & Labour-based Rural Roads Construction and Maintenance Project. The system of government in Lao PDR grants a wide degree of autonomy to districts and provinces in the formulation of their rural development programmes. Projects were identified at the local level and forwarded to Vientiane for approval and funding. However, projects were often identified at random, often based on requests from local residents or local political figures. No clear criteria for selecting rural infrastructure projects were available and there was little evidence of planning based on an overall assessment of the demand in the rural areas. In terms of road development, road projects were mostly identified in isolation and did not form part of an integrated strategy to improve living conditions in a selected area. Contractor Development and Local Level Capacity had weaknesses. There was little time for the development of a viable domestic construction sector. In addition, the process of developing the capacity of the provincial governments had only begun in response to the governments concern to improve the delivery capacity of the decentralized governmental system.
Use of tools and local resources	It was found that apart from basic hand tools, the Labour-based Rural Roads Construction and Maintenance project procured some items of light equipment including single axle tractors, 1.5 tonne trailers, dead-weight rollers and water bowsers. All tools and equipment, with the exception of supervision vehicles, were purchased on the local market. While most items for Lao PDR originated from China or Thailand, some items had been manufactured locally, according to design specifications given by the project. Such items included ranging rods, profile boards, heavy duty rakes, hand-rammers, wheelbarrows, dead-weight rollers and water

	bowsers. Lack of and old and inappropriate equipment had often been the reason why domestic contractors were barred from works contracts in the road sector.
Mechanism of delivery of labour based works	Two systems of mechanism of delivery were identified on Labour-based Rural Roads Construction and Maintenance projects. - *Force account* - The road works are organized as force account operations, directly managed by staff from the Department of Communication, Transport, Post and Construction (DCTPCs). Initially, work was organized as *daily work* where the labour were paid a fixed daily wage rate (current rate: 1800 Kip/day) for working 7 hours a day, six days a week. Later, when site production rates had been established, the *task work* system was introduced for most work activities. - *Community contractors* - On most of the completed road sections the length man system had been introduced. However, on a trial basis, the project had also awarded maintenance contracts on a collective basis to villages near the roads. Under this system, a village which had participated in the road improvement was contracted to carry out maintenance for a contract sum of 75,000 Kip (approx. US$ 80:-) per km per year. The project developed a simple model contract for this purpose. The village committee decided who to participate in the maintenance works and how the funds received should be spent.
Government policy and donor attitude	The Government of Lao stated that one of its policies was to improve rural communities' access to the main road network. The intention was to be done through the development of a national programme for feeder road construction in the provinces and districts with funds provided through a national programme budget. This was to be done by measures designed to: ▪ introduce a systematic planning process for feeder roads, ▪ increase the allocation of funds for feeder roads and bridges, and ▪ promote the development of private sector construction and maintenance capabilities. Given the economic situation of the country and the need to develop and rely on the countries own resources, labour based methods would seem a priori, as a logical approach to the development of rural infrastructure. On the other hand, major proportion of the budget for infrastructure in the country was provided from external, donor funds. In line with the Government's concentration on rural development, these donors accepted starting to reorient their emphasis away from major infrastructure programmes to those of rural infrastructure. The World Bank, ADB, UNDP, SIDA and several others were in the process of defining programmes of rural infrastructure development.
Technical aspects	Road infrastructure was limited and where it did exist, it was poorly maintained, causing a serious constraint to economic and social development. For a road, standards are determined by level of traffic. In Lao, it was found that the traffic levels were low. On the main roads, traffic volumes ranged between 15 and 336 vpd, though at most traffic count sites average daily traffic was below 150 vpd. Information on traffic on provincial or rural roads was scarce since traffic surveys had only been carried out on the national roads. However, based on village surveys and evidence some five years ago, the

National Transport Survey (NTS) estimated that a population of about 1000 households within 20 km of a passable road could generate a traffic volume of 3 vehicles per day.

There was practically no preventive road maintenance on the rural roads in Lao PDR, nor was there any proper maintenance set up in the provincial departments of MCTPC in the provinces. The main reason for this situation was the limited funds available for any type of maintenance activities. As a result, the roads kept deteriorating and the repair needs got more and more desperate.

To determine maintenance requirements, the current condition of a particular road has to be analysed. The table below summarizes the road network.

	Bitumen	Laterite	Earth	Total
National Roads	1,674	1,646	1,144	4,464
Provincial Roads	360	1,970	3,566	5,896
Local Roads	78	1,073	4,711	5,862

Road Network in Lao PDR (1996)

However, this did not fully describe the situation with regard to access to the rural areas. Of the total provincial road network less than 35 percent was thought to be passable in the wet season and only half of the population was estimated to have road or river transport access throughout the year. Only 51 district centres of the total of 133 have all-weather access, and 15 have no road access even in the dry season.

Financial management

In Lao the process had been that once the annual budget has been decided upon, the corresponding finance procedures and cash flow concerning provincial road projects run directly between the Ministry of Finance, and the provincial DCTPCs. Thus, the MCTPC headquarters were not involved in the payment process. The general principle for financing road sector activities was payment from a Treasury account (local funds) or a foreign account (owned by a donor agency or development bank) according to an invoice which must be approved by the appropriate authorities in MCTPC and Ministry of Finance (MoF). Payments of invoices in local currency were being delayed or paid only in part. Payments to local contractors on externally funded projects are made through the BCEL (Banque Commercial Exterieur du Laos) in Vientiane to the contractor's account in a local bank. When the projects were funded entirely by local revenue, the invoices from the contractor were paid out directly from the Finance Division of the DCTPC.

Below are the main two alternatives of payment and number of days that payment could be delayed.

Alternative A: Foreign Currency Fund

A1: Maintenance Project (ADB or IDA funding) : 13 – 23 days

	A2: Construction project (ADB, IDA, SIDA): 31 – 37 days *Alternative B: Local funds: 48days* It was admitted that payment delays were quite frequent and that local contractors often called to demand more timely payments. Waiting for many days to get signatures by some of the staff responsible for different steps of the invoice handling process was quite common. If some detail was wrong in the set of documents, and this was detected at a late stage during the checking and signing process, the whole file was returned to the project manager who had to contact the Contractor and ask for a new invoice. Before, corrections of minor errors with a red pen were allowed but this was no longer permitted. As a result of the present strict rules, contractors sometimes had to wait up to three months before receiving payment.
Procurement systems	Most labour based road works, including the projects in Lao PDR, had previously been public works schemes carried out by force account. By then, there had been a move towards increasing the involvement of the domestic private sector in the execution of road works in the country. The majority of road investments during the past ten years had been used to establish a functionable trunk road network in Lao PDR as a result, large-scale international contractors were brought in. There were no small scale contractors to carry out labour based works. Contracts management procedures and documents for major works such as road rehabilitation and new construction followed to the extent possible the existing procedures of the government. For rehabilitation and new construction works, there were two standard types of contracts available in Lao PDR which seemed to meet the requirements of clarity and simplicity. One was used on a number of IDA funded road maintenance projects and the second standard contract was still being prepared within an ADB financed project, developing a Management Information System in MCTPC.
Reporting and Monitoring systems	At the time of this feasibility study, Lao had no standard reporting formats for project monitoring in MCTPC. Each project had its own standard report every week, month, etc. For projects assisted by foreign consultants, the normal procedure was just to translate the consultants' reports to the donor agency into Lao. Since the donors all had different reporting formats, the result was that a variety of formats were being used in MCTPC. The reporting formats should meet the requirements of the donors but also fit into the longer term reporting needs of the government. In a brief and concise manner the reports should present feed-back and work results in measurable terms, providing information in terms works completed, expenditure, and number of labour employed.
Gender considerations	When labour based works are carried out using both government institutions and private contractors, it is important that the representation of women participation in the works does not

	diminish. This issue needs to be carefully monitored, and if necessary, proactive measures need to be taken, possibly by introducing quotas included in the special clauses of the works contracts. Women should also be provided equal opportunities, in terms of recruitment for management positions, training and career advancement
Environmental aspects	In Lao PDR, it was found that most roads needing rehabilitation follow existing tracks and therefore did not cause interference in the economic activities in the rural areas through which they passed. However, it should be acknowledged that the roads were passing through areas where the farms are small and any encroachment on existing farm lands might have dire consequences for the local farmers. A major consideration in roads development was the requirements of existing irrigation systems and associated eco-systems, since it was of prime importance to retain water rather than, as road engineers may prefer, to allow free drainage regimes – provision of mitre drains. To form embankments, soil was to be excavated locally at regular intervals in the form of shallow borrow pits. Laterite excavation was limited to a number of gravel pits where some environmental damage could initially result. Clearing of landslides comprised a major activity of road maintenance in the hilly and mountainous regions. The cause of the landslides was mainly due to side-cuts excavated to make place for the road width. Local farming activities adjacent to the road (in particular slash and burn activities) often accelerated this soil erosion process.

4.3.3.5 Design and cost different options

At this stage, the existing situation as discussed in Table 4-15 above is analysed and options compared and then a better alternative proposed. Design is a critical function. It establishes the basic programmes, allocates responsibilities, determines activities and resources, and sets down operational form the areas of priority and functions to be carried out. Environmental factors, social criteria, technological requirements and procedures are assed and included.

4.3.3.5.1 Designing the scheme

(a) Mechanism of delivery of labour based works

Due to lack of capacity in the government force account units, the private sector – use of small contractors were recommended for the labour based works as there was a trial of length man system which gave good indication.

(b) Build contracting capacity

To build capacity in both government institution and private sector, technical assistance was needed to conduct trainings for both in terms of procurement, project identification, reporting and monitoring systems, planning systems, develop manuals for labour based works and budgeting accounting procedures. This was to be done at both central and provincial level.

(c) Institutional arrangement

The government of Lao PDR established a Rural Development Committee within MCTPC as a coordinating body which could effectively monitor the performance of various labour based works programmes.

(d) Finance and decentralization

Funds for rural development should be directed to and controlled by the provincial authorities as they would be expected to manage and supervise future improvement of the rural roads. The Rural Development Committee would monitor the physical progress of the works, and based on this information advise the finance authorities on the advance disbursement of further funds to provincial department of funds, thereby ensuring a healthy cash flow to the provinces and avoiding any disruptions of work progress.

(e) Administrative structure

The Department of Communication, Transport, Post and Construction (DCTPC) staff requirements in each province, for taking care of the clients interest and obligations when contracts were to be awarded to the contractors, are described in Figure 4-8. The organization catered for the management and supervision of both road rehabilitation and maintenance contracts. In each of the DCTPCs, a maintenance unit would need to be established. This unit would be responsible for maintenance management of all roads in the province. The staff in this unit would need to be trained in road maintenance management functions and respective responsibilities.

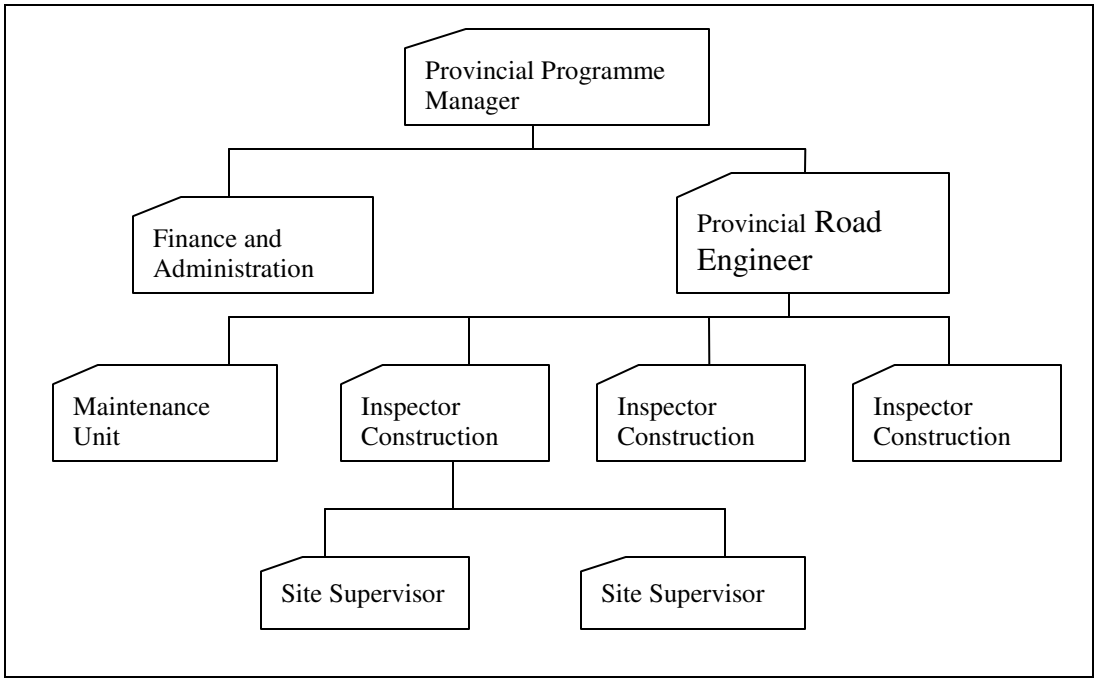


Figure 4-8: Organization for DCTPC Road Section

(f) Project monitoring

The DCTPC office is to be preparing weekly, monthly and quarterly reports for monitoring financial situation and physical progress.

(g) Procurement plans

The existing contract documents were recommended with minor revision to cater for use of labour based works.

(h) Environment protection

To mitigate *environmental impact*, construction works with , labour-based methods supported by light equipment would constrict to within the limits of the road width. The sitting of borrow pits to be agreed with local communities beforehand in order to gain the best future advantage for them. Borrow-pits were also to be well shaped and landscaped after excavation operations but many were widely and continuously used and any

rehabilitation of the pits would be done at a later date. Eventually, natural vegetation would be very quick to reclaim these areas once they have been worked out.
On embankments, it was recommended that turfing could be carried out and that trees were planted on the side slopes for soil protection purposes. The trees were to be maintained during their growth period by the routine road maintenance length men, and would improve the overall environmental conditions in the area.

Landslides was a serious maintenance issue which needed to be considered at the planning and design stage. In order to reduce future maintenance demands, road alignments should be designed in a fashion where side-cuts were reduced to a minimum. When sidecuts could not be avoided, soil stabilization measures such as retaining walls, tree planting, etc. could be implemented. These measures would involve increased initial costs during the construction period, but may significantly reduce future maintenance requirements.

(i) Wage rate

In Lao PDR the opportunity cost of unskilled labour was found to be about US$ 1.7 per work day, although there were seasonal variations with labour supply being at a premium during the sowing and harvesting periods of the agricultural cycle. This low wage levels were under US$ 4.00 per day according to World Bank studies.

(j) Task rates and incentive schemes

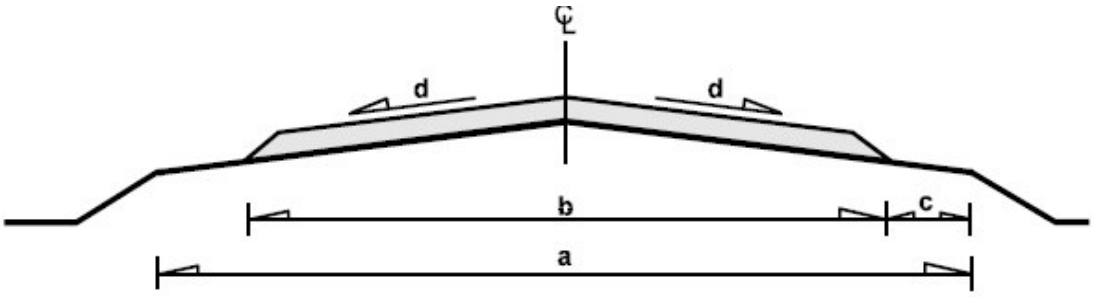
In order to achieve good production rates, it is recommended that incentive schemes are offered to the workers. In this respect, incentive scheme – daily paid work, task work, piece work and payment in kind were suggested for adoption.
Table 4-16 shows some average task rates which were proposed to be used in an initial phase, before more appropriate quantities had been determined through site trials.

Table 4-16 : Average Task Rates

Clearing and Grubbing	50 – 150 m2 / wd	Camber formation	75m2 / wd
Levelling	1.5 – 3.o m2 / wd	Turfing	10 – 20m2 / wd
Earth, excavation, 20m transport and hand compaction	1.5 – 2.5 m3 / wd	Gravelling (spreading and levelling	5 – 10 m / wd
Drain Excavation	1.5 – 3.0 m3 / wd	**Note :** wd means working day	

(k) Prepare preliminary technical designs

In Lao PDR as elsewhere, any suggested standards were to be based on economic and technical considerations. The total rehabilitation needs were extensive. Hence, functional standards were recommended. These could be revised upwards as the traffic increases and more funds became available, in a stage construction process. The MCTPC Design Manual contained guidelines on appropriate geometrical design of roads depending on the expected traffic loads of the roads divided into seven different classes. The proposed geometric design was from the design guidelines prepared for class V, VI and VII roads which are summarized in Figure 4-9.



Parameter	Ref.	Class V			Class VI			Class VII			ILO	
Type of Terrain[1]		F	R	M	F	R	M	F	R	M	F	M
Average Daily Traffic (vpd)		100-300			50-100			< 50			< 50	
Design Speed (km/h)		60	40	20	60	40	20	40	30	20	30	
Formation Width (m)	a	7	7	6.5	6.5	6.5	6	6	6	5.5	5.5	5.5
Carriage-way Width (m)	b		5.5			3.5			3.5		5.5	
Shoulder Width (m)	c	0.75	0.75	0.5	1.5	1.5	1.25	1.25	1.25	1.0	0	0
Cross-fall (%)	d					3 - 4					8	
Max Gradient (%)		7	8	9	7	8	9	8	9	10	10	
Max Axle Load (tonnes)						9.1					5	

1 Flat, Rolling and Mountainous terrain

Figure 4-9: Standard Cross-Section

(l) Labour availability and equipment

With experience from ILO and other donors, Lao in 1996 had sufficient numbers of under- or unemployed persons in the areas where the work was required plus local availability of construction materials and shortage of conventional construction equipment and high capital costs. Options – direct sale, hire from government, hire from private owned plant pools, and hire purchase from a local bank were provided for the government to consider on how to make simple tools and equipment available to local contractors.

(m)Government policy

Government had commitment to the development of employment and generation of income in the rural areas.

(n))Women participation

In Lao rural women made up 30 - 40 percent of the workforce employed by the ILO labour based project, demonstrating that this kind of work was both culturally acceptable and a potential source of income for women and their families.

(o) Prepare work programme

Another component of the scheme design is the preliminary work programme. During a feasibility study in Malawi, a timetable was prepared in collaboration with the key partners of the programme during the training of trainers' workshop. All the subjects mentioned in the timetable were reviewed in detail during this workshop. At the end of each review session, their key features in terms of course objectives, contents, target audience, duration and training methods were formulated. As a final exercise, the participants of the workshop compiled the various course modules into a comprehensive training package with the resulting timetable as shown in Figure 4-10 below (*Johannessen, 2000:59).*

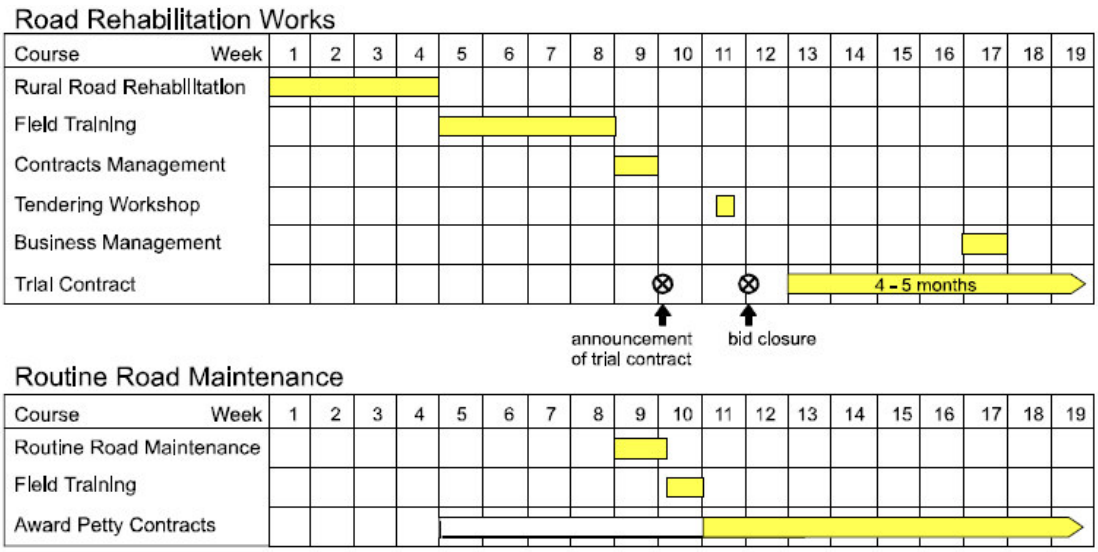


Figure 4-10: Work Programme for Contractor Training in Malawi (2002)

4.3.3.5.2 Costing the options

A better example on comparing Labour-based methods with equipment-based methods: in direct financial as a way of costing the options was also by *Johannessen (2002)* in another feasibility study for Smallerholder Development Project in Lao PDR.

Equipment intensive or labour based methods.

The following Table 4-17 show a summary, comparing the direct costs using equipment intensive or labour-based methods.

Table 4-17 : Cost Comparison: Labour vs Equipment in Lao PDR (2002)

Direct Costs	Length	Equipment		Labour	
Road	km	US$	US$/km	US$	US$/km
Soukhoma - Mounlapamok	45.5	649,326	14,271	550,432	12,097
Champasack - Soukhoma	35.5	646,531	18,212	576,272	16,233
Champasack - Phonethong	25.4	689,984	27,165	574,252	22,608
Songkhone - Thapasoum	28.0	326,120	11,647	266,900	9,532
Champone - Xonboury	26.0	605,808	23,300	512,288	19,703
Grand Total	**160.4**	**2,917,768**	**18,191**	**2,480,143**	**15,462**
Cost savings				437,625	

As can be seen from the Table 4-17 above, the cost savings from using labour-based works technology were approximately US$ 430,000, which constituted a 15 percent saving in the direct construction costs. Considering the small difference between the two alternatives, and since these are preliminary figures, and not based on a detailed survey of the works, a detailed survey would most probably have a higher impact on any future changes in these cost estimates. From Table 4-17 above, labour based works was proposed as the better scheme.

4.3.3.6 Cost / Benefits analysis of alternatives

This examines the cost effectiveness of the approach selected. This begins with an analysis of the estimated total cost of the project. After the total cost the project has been calculated, a cost and evaluation summary is prepared which include things like as a cost / benefit analysis, return on investment *(Law, 2008:1).* The appraisal of projects using benefit – cost techniques is based on a time profile of costs and benefits for the parties affected by the project. It has been developed to deal with public-sector type projects where there is no commercial return. The construction of a road, for example, brings many benefits to the community. These benefits may include time savings, operating cost savings. Whilst all these benefits undoubtedly exist and a road project under consideration may be worthwhile, the benefits to the community do not show themselves as revenues or positive cash flows. Thus, the techniques of calculating net present value to

determine if the future justifies the investment at a given rate of return is not readily applicable, unless the benefits are translated into monetary terms. *(Harris and McCaffer, 2006: 291).* Table 4-19 is a sample of cost / benefit analysis for labour based works in Botswana.

Table 4-18: Cost / Benefit analysis in Botswana

A cost-benefit analysis was however carried out for the proposed upgrading of the 1 365 kilometres of non-gazetted tracks in the Central District in Botswana. The evaluation was carried out in relation to the two types of upgrading i.e. Stage One upgrading only and Stage One and Stage Two upgrading. The evaluation was based on three assumptions about policy objectives:

(i) In the financial costs evaluation the estimated benefits were compared with the actual financial costs of construction and maintenance

(ii) In the economic costs evaluation, unskilled labour was shadow-priced at P1-50 per day

(iii) In the economic costs and weighted benefits evaluation unskilled labour was shadow-priced as in (ii) above and road-user benefits to the rural poor were weighted 2.5 times the nominal value.

At Average Daily Traffic (ADT) = 10, Stage One improvement showed an adequate financial return (IRR = 8%), healthy economic return and a high return (IRR = 22%) with weighted benefits. With weighted benefits, an adequate return was obtained at ADT below 5% (i.e. IRR = 9% at ADT = 4.9% and IRR = 6% at ADT = 4.4%).

At ADT = 10, Stage One and Two upgrading had a poor financial return (IRR = 1%)and a barely adequate economic return (IRR = 6.4%) but a healthy return (IRR = 17%) with weighted benefits. With weighted benefits, an adequate return is obtained at an ADT of 6 or less. The above evaluation showed a high sensitivity of benefits to average daily traffic.

A further analysis was carried out for the proposed expanded programme and although the returns were lower due to the larger geographical spread of the programme the economic return and the distributional benefits made the programme highly attractive for Botswana. The high sensitivity of benefits to the average daily traffic was once again noticed for weighted benefits and economic costs. A 5% higher ADT accounted for a 50% increase in economic return (*Muatjetjeja, 2006:73).*

4.3.3.7 Determine project selection criteria

The selection and prioritisation of roads project in Lao PDR were based on two basic beneficial criteria:

(i) economic justification and

(ii) social considerations.

The benefits normally considered in an economic evaluation are:

- direct savings in the cost of operating vehicles,

- economies in road maintenance costs,
- time savings by travellers and freight,
- reductions in road accidents (although these often *increase* on improved roads), and
- wider effects on the economic development of the region

The following (Table 4-20) were amongst the social criteria that may be used for ranking rural road rehabilitation projects:

Table 4-19: Social criteria for selection of projects

- Present condition of the road. Communities without any access should be given high priority. The better the existing access, the lower the priority.
- The availability of access year - round. Communities without access only during some parts of the year should have higher priority.
- The area influenced by the road. The larger the area of influence, higher the priority. The correct determination of the area served is important but is difficult to identify. The limits of the area are generally provided by watersheds, rivers or the proximity of adjacent roads. In the situation of rural roads in Lao PDR, the area within walking distance of two hours from the proposed road can be taken.
- The inhabitants served. The greater the number of inhabitants to be served, the higher the priority.
- Present transportation costs per km. Road transport costs are related to the road condition. The higher the present costs, more these costs will decrease by road improvements.
- The area of cultivable land within the area of influence. A rural road programme should benefit as many farmers as possible. Roads leading to fewer farms and houses should be given lower priority.
- Increased area of cultivable land. By improving access, the inhabitants may be encouraged to cultivate more land within the area of influence of the road.
- Orientation of local produce to the market. The greater the volume of marketable produce, higher should be the priority for road improvement.
- The potential increase in marketable production. Increased production is related to road conditions, because improved access to markets will encourage the inhabitants to produce more goods to sell.
- The availability of social and economic services. Most of the social and economic services (medical, educational, and agricultural inputs) end where the trafficable road ends and go no further. Improved access can extend these services to isolated communities.

4.3.3.8 Prepare Project / Financing Proposal

All of the preceding elements are then assembled into a feasibility study *(financial / project proposal)* and review is conducted with all parties involved. The review serves two purposes: to substantiate the thoroughness and accuracy of the feasibility study, and to make a project decision; either approve it, reject, or ask that it be revised before making a final decision. *(Law, 2008:3).* A meaningful appraisal of the project is possible at this stage is thus important. Policy and decision makers and lending institutions may carry out the appraisal. They satisfy themselves that the project meets the conditions that enable it to proceed. Their concern is to determine whether or not the project is the best means of reaching the objective they have set. They may review the project itself and alternative means of reaching the objective. They attempt to determine whether or not the project is intrinsically sound and whether or not all the circumstances that surround it are viable. *(Goodman and Love, 1983:13).* The outcome is a decision on whether or not to propose the project for financing. *(PCM – EC, 2001:3)*

From *GoM / EU PWP Phase 2 – Financing Proposal, IGPWP Phase 2 – Financing Proposal and EP&D, PPM, 2005,* the following (Table 4-21) are the contents of project proposal:

Table 4-20: Contents of financing proposal

(a) The origin and preparation of the programme Need / opportunity, Expected benefits, Stakeholder involvement, Backup information – special studies or pre-feasibility studies.	**(b) Project setting** Economic and social situation, National development policy, Support of decentralization, Problem analysis of the target group
(c) Project description Overall objectives, Project purpose, Results, Activities, Indicators	**(d) Project analysis** Existing situation, Major constraints, Linkages with other programmes, Results of cost / benefit analysis, Risks and assumptions
(e) Project Implementation Institutional arrangement, Organizational procedures, Appropriate technology, Time table, cost and financing plan, Special conditions (if any), Monitoring and follows ups, Reviews / evaluations / audits: procedures and reports	**(f) Annexes** Logical framework, Budget, Summary of timetable.

4.3.3.9 Revise the Project Concept

As preliminary designs might have been made, activities are redefined, estimates of resources can also be drawn and these can make costs for the project readily available. The means and costs on the logframe (Phase one) which was developed during the conception of need phase are then incorporated.

4.3.3.10 Revise Project Brief and Execution Plan

Using the data from the financing proposal, the project brief and execution plan (chapter 2 – deliverables) are also revised.

4.3.3.11 Summary

It has been found that at Phase Two - Feasibility Studies of the Process Protocol for labour based works, many options could have been presented as possible solutions to the identified problem. The purpose of this phase is to examine the feasibility of the project and narrow down the solutions. The objectives should include:

- Exploring all possible options for implementing the project
- Achieving a clear understanding of the issues involved
- Producing enough information to be able to rank the options
- Obtaining a clear picture of the way forward**.**

The goals are:

- Preliminary design and all deliverables ready for detailed planning approval
- Gain financial approval to proceed to phase 3

Upon agreement with the stakeholders, the logframe is revised and finally a project / financial proposal is formulated for funding whose approval initiates the next phase called detailed design or preparation of work plans. The next section looks at the processes that are involved in preparation of work plans (*phase three)* for labour based works. The key processes of phase two are summarised in Table 4-21 and Figure 4-11 is phase two process flow diagram.

Table 4-21: Phase two processes and deliverables

Processes	Deliverables	Country Experience
Appoint Feasibility Study Team		India - PMGSY Lao PDR
Scope the Study	Overall Objectives	Malawi - CARE
Evaluate Existing Situation	(statement of need (finalised) Constraints / Opportunities	Lao PDR
Design the Scheme	▪ Training plan (Pilot) ▪ Institutional arrangement ▪ Administrative structure ▪ Project Monitoring ▪ Environment Protection ▪ Wage Rate ▪ Task Rate ▪ Incentive Schemes ▪ Preliminary Technical Design ▪ Sources of equipment / Tools ▪ Labour availability ▪ Finance disbursement procedures ▪ Women participation ▪ Preliminary schedule	Lao PDR
Cost the Options	Cost plan	Lao PDR
Cost / Benefit Analysis	Economic benefits	Botswana ▪ Labour Intensive District Roads Programme (LG 34)
Determine project selection criteria	Social benefits	Lao PDR
Prepare Project / Financing Proposal	Project / financing proposal	Malawi ▪ IGPWP ▪ GoM / EU PWP
Revise the Logframe	Logframe (updated)	Malawi ▪ IGPWP ▪ GoM / EU PWP
Revise Project Brief	Project brief (updated)	
Revise Execution Plan	Execution plan (updated)	

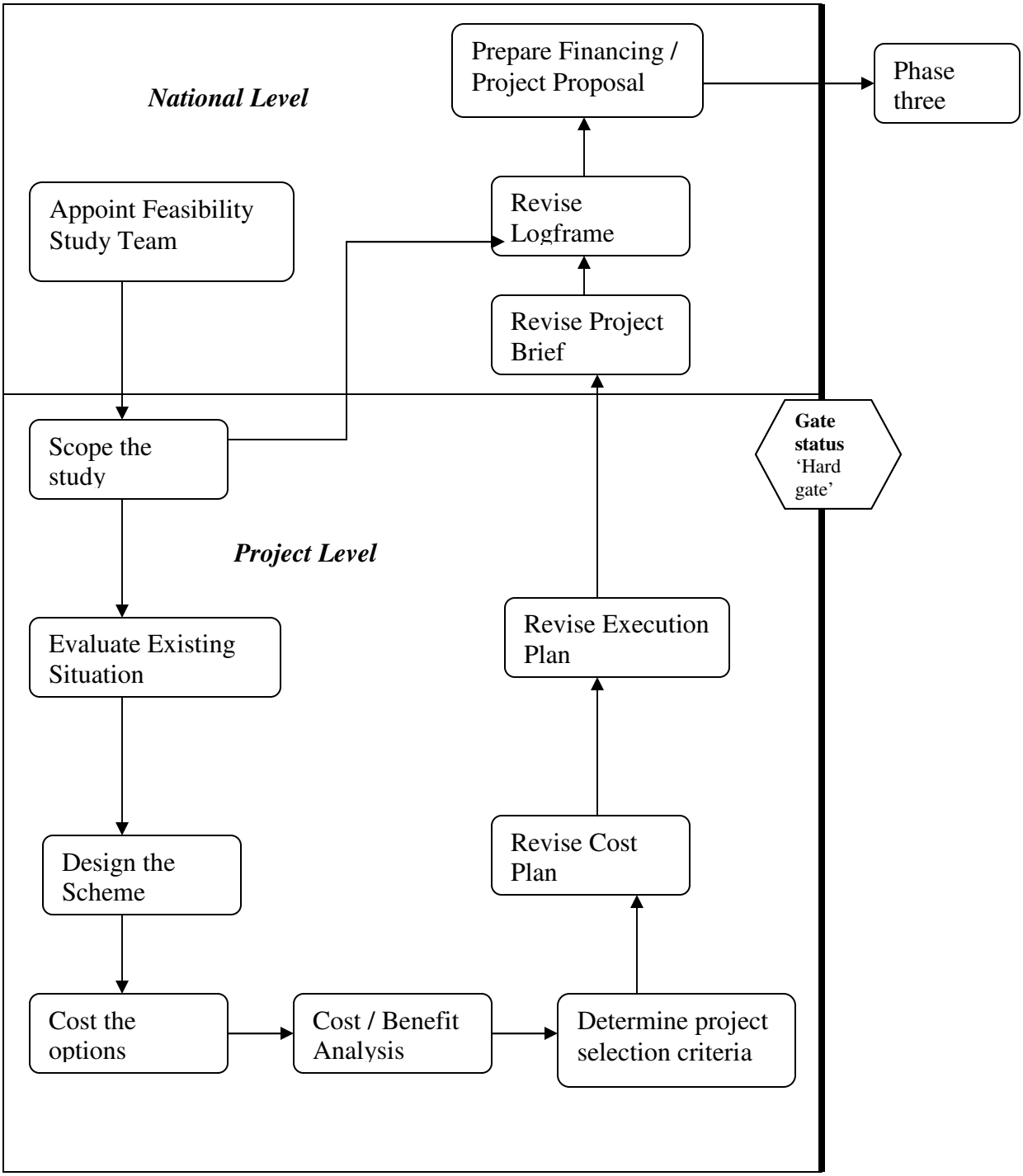


Figure 4-11: Phase two process flow diagram

4.3.4 Phase Three – Prepare Work Plans

4.3.4.1 Introduction

This section describes a disciplined, structured method for selectively collecting information to use through the next phases of the project process, to meet the needs of all stakeholders. It outlines tasks that participants of the project have an understanding of what is to be done. An integrated information system is developed to schedule work and allocate budgeted funds which are later used for control. According to literature, phase four to phase six of the Process Protocol are collapsed into one phase by practice in labour based works. It is commonly known as preparation of work plans / project plans. Phase three of the management processes of labour based works is preparation of work plans. Work plans are prepared after getting financing / project proposal from the feasibility studies *(phase two)* and / or integrated local level *(phase zero)* is selected, appraised and approved.

Bartle, (2007:3) defined a work plan as an argument; it is written to plan the activities for a period of time, first so as to convince decision makers for its approval, then as a guiding document for the activities to be carried out during that time period. The purposes of the work plan are several. It is a planning and management instrument (tool) which provides a framework for planning the work, and is a guide during the period in questions for carrying out the work. It is also used by funding agencies and executing agencies as a document for justifying the release of money. It is also a useful document contributing to transparency, as copies of the work plan can be given to those persons or organizations who have a need or a right to know what is being done, and why, during the current period.

Looking across the Process Protocol, the following make up the deliverables / activities of phase four to phase six:

- Revise project brief
- Revise business case
- Revise project execution plan
- Revise procurement plan
- Prepare cost plans

- Prepare concept designs
- Inform design process
- Revise CDM assessment
- Revise site and environmental issues
- Prepare maintenance plan.

The following describes processes and experience with preparation of work plans for labour based works in Malawi with respect to the above mentioned processes. This project was funded by European Union (Commission) - project identification no MAI / 6021 / 004. It is based on GoM / EU Public Works Programme documents - Work Plan No 2 dated 1 April 2002 to 31 March 2003, inception report (2001) and final report (17 April 2001 to 31 July 2005). Roads Component was the major component of the public works programme that took a bigger percent of the available resources of the programme. Hence the discussions herein and the next sections will be based on the road works component.

4.3.4.2 Delegate authority

In general, it is better to execute development programmes by modify existing institutions to meet new needs rather than to create new institutions. In some cases, the responsibility for labour based road projects has been placed with government agencies, other highway department, such as local government or rural development agencies, whose principal objectives are to employ the rural poor and to develop local organizations for community construction projects. *(de Veen and Thegesen, 1995:353).* Authority should be delegated to the level most capable of making timely and appropriate management decisions, and should be supervised ex-post.

According to *Pratt and Newton, (2007:11)*, the overall responsibility for the implementation of the EU / GoM PWP lied with the National Authorizing Officer (NAO). In accordance with Article 35(1) of Annex IV to the Cotonou Agreement, the NAO delegated to the Ministry of Local Government and Rural Development, Programme Supervisor, his responsibilities and powers for implementation

Delegating authority to local government can also result in designs that favour the use of labour-based methods. Decentralization places decision-making where heavy equipment is often less readily available, where engineers who favour equipment-based techniques are not concentrated, and where equipment-based contractors do not see big stakes *(Tendler 1979a).* Thus, local government entities are likely to espouse a simpler technology that favours the use of labour rather than equipment. *(Stock and de Veen, 1996:21)*

4.3.4.3 Set institutional framework

Separate institutions could be more flexible and bypass bureaucratic procedures, for quicker results, but efforts to integrate poverty alleviation into existing institutions could be better for long – term sustainability. *(Yahie, 1996:144).* In the *final report (2006:11)* of the programme *"Employment Creation in Municipal Services Delivery in Eastern Africa- Improving the living condition and providing jobs for the poor"* in Tanzania, it was reported that during the first quarter, *Programme Advisory Committee members* were identified. Besides, there were regular meetings of the established *Technical Committees* which formed a useful forum for programme monitoring and advice to *Programme Management Unit.* See Table 4-5 for membership of the above institution for GoM / EU PWP in Malawi.

4.3.4.4 Recruit core project staff & establish the organization structure

Starting the project management unit is most challenging task for the government. Local communities will always be suspicious of government actions regardless of their merit. During an initial scoping meeting which was held, it was resolved that implementation would be done through a private PMU situated in Lilongwe. The private PMU would be staffed by personnel recruited by advertising in the local press and appointing capable personnel to provide logistical and administrative support to the programme. This core team of capable people would then be supported and their capacity enhanced by extension officers seconded to the programme by the NRA, DA's, NGO's and Consultants as and when required.

The signing of the contract for the appointment of the PMU was concluded by the end of

March 2001 whilst the effective date for commencement of the services to be provided by the PMU was set at 17 April 2001. The PMU was led by Africon, who was supported by specialists in the accounting, environmental, roads engineering as well as the forestry and irrigation fields. Africon supplied a team of three (3) expatriate technical professionals in terms of the Terms of Reference (ToR). The management team depicted in Appendix 3 – annex 5 (excluding Irrigation and Forestry) commenced active operations in Lilongwe on 17 April 2001. It was the duty of this team to appoint the rest of the staff complement as and when required reaching full strength at the height of operations from March 2002 to March 2004.

4.3.4.5 Verify scope of work

Scope verification is the process through which the client and the stakeholders formally accept the deliverables of the designed scheme. During the scope verification the *project brief and execution plan* are reviewed and updated.

For GoM / EU PWP, a number of scoping meetings were held with programme stakeholders on 16 May 2001 in Lilongwe. These meetings were intended to:

- verify the scope of the programme
- agree the first estimate of the phasing of the programme objectives within three work plans
- determine the departmental line function roles and responsibilities with respect to the programme implementation; and
- clarify the PMU establishment requirements.
- Representatives from the Department of Irrigation, Department of Forestry, NRA, and
- European Commission Delegation attended the meetings. Two NGOs – MAFE and MASAF – and a representative from Valentine Consulting also contributed to the discussions at the meetings.

The scope of work to be verified included project objectives, deliverables, milestones, technical requirements and limits and exclusions as shown in the Table 4-22 below.

Table 4-22: Sample of scope for GoM / EU PWP

Project Objective - In order to achieve durable poverty alleviation, the GoM/EU PWP is targeting overall socio-economic improvement. Since lack of accessibility to rural areas and natural resource degradation have led to impoverishment and food deficits, the programme will achieve its purpose by concentrating on the leading causes of the impoverishment. The project purpose is therefore to improve the socio-economic situation of the rural population through improved accessibility and management of natural resources. The GoM/EU PWP is financed by the 8TH European Development Fund (EDF) under the 8.ACP.MAI.022 agreement to a value of €15 million. The GoM/EU PWP is implemented through 3 successive global annual work plans. The signing of the contract for the appointment of the Technical Assistance Consultants for the PMU was concluded by the end of March 2001. The effective date for commencement of services was 17 April 2001.

Deliverables - It was initially expected that, at the end of the three year implementation period, the following would have been achieved by the programme:

- 2,250 km of feeder roads would have been rehabilitated and maintained
- 12 million trees would have been planted on communal lands
- 12 million trees would have been planted by individual farmers
- 226 irrigation schemes (1,800 farmers) would have been established.

Milestones - It was originally determined that the implementation of the GoM/EU PWP would be implemented as follows:

- Start-up phase - April 2001 to July 2001;
- Work Plan No 1 - August 2001 to March 2002;
- Work Plan No 2 - April 2002 to March 2003;
- Work Plan No 3 - April 2003 to March 2004;
- Agro-forestry maintenance payments - April 2004 to March 2005

Component	Activity	Work Plan 1	Work Plan 2	Work Plan 3	Total
Roads	Rehabilitate	150 km	950 km	1,150 km	2,250 km
	Maintain	-	150 km	1,100 km	1,250 km
Forestry	Plant (Communal)	1,3 mil	4,3 mil	6,4 mil	12 mil
	Plant (Farmers)	1,3 mil	4,3 mil	6,4 mil	12 mil
	Establish Funds	75 no	600 no	600 no	1,275 no
Irrigation	Establish Village Schemes	6 no	110 no	110 no	226 no
	Participating Farmers	48 no	880 no	880 no	1,808 no

Technical Requirements

- One of the main objectives of the GoM/EU Public Works Programme is to rehabilitate approximately 1530 km of feeder or earth roads in the 5 districts by labour intensive construction methods, 720 km of districts and tertiary roads by partly mechanized methods and maintenance of approximately 1250 km of these rehabilitated roads by labour intensive contracts.

○ The Standard Specifications for Road and Bridge Works (Metric Edition) commonly used in Malawi on smaller scale contract will be used, with amendments and additions to these specifications compiled under separate Project Specification which will be incorporated in the contract documents. ○ The standard tender documents of the NRA will be used with adjustment of the contents to customize the contract documents for labour intensive construction for the road rehabilitation works. ○ Items required for the smooth execution of all the PMU activities have to be resourced and acquired in accordance with the rules and regulations of the EU and Malawi Government.
Limits and Exclusions ○ The programme would encompass the five districts of Dowa West, Kasungu, Lilongwe West, Ntchisi, and Mchinji. ○ The NRA will be consulted to obtain information on priority feeder roads in the five districts, which require desperate major rehabilitation and upgrading works. ○ The PMU will however not be responsible for the day-to-day management of labour in the field, which responsibility will be that of local contactors.

4.3.4.6 Identify work plan activities & allocate responsibilities to stakeholders

In line with the programme's objectives, each component - roads, forestry and irrigation developed its own implementation approach in turn to expedite its activities and reach its objectives. An activity is a discernable task or work function where a particular worker or crew of workers completes a specific item of work within a prescribed time frame *(Patrick, 2003:52)*. The project activities (appendix 3) are characterized by certain criteria.

(i) The activity outcome, work operation or 'job' is measurable. The activities have measurable objective that can be met as determined by project participants. A few examples for GoM / EU PWP were categorized as and included:

- Management activities (appendix 3 – PMU support and Roads staff salaries)
  - Provide sufficient qualified and experienced support personnel (PMU) - PMU support stuff salaries for 12months
  - Provide sufficient qualified and experienced support personnel (Roads) - Recruit and deploy technical supervisors – 9persons.
- Procurement activities (appendix 3 – annex 2)
  - Implement Contract Management Procedures
- Construction activities (appendix 3 – annex 2)
  - Road Rehabilitation Works – 850km

- Bridge Rehabilitation Works – 234m

(ii) The activity has a distinct start and finish time. The time required to perform an activity is called duration, the time between its start and finish. e.g. (Appendix 3 – annex 3)

- Road Rehabilitation Works has a duration of 10months
- Bridge Rehabilitation Works has a duration of 4months

(iii) The activities are prone to consumption of resources (i.e. time, material, equipment labour or money). Appendix 3 – annex 2 shows costs of some activities.

- Road Rehabilitation Works cost Mk182,793,000.00
- Bridge Rehabilitation Works cost Mk46,800,000.00

(iv) The activity is also assignable to project stakeholders. The project activities have been assigned responsibility to a project team. The allocation of the responsibility is essential to make sure that the work is done on time and the objective is to distribute the work fairly and evenly among the team *(Young, 2003:137)*. A record of responsibilities is then kept for the allocation. Appendix 3 – Annex 1 shows the distribution of responsibilities for the GoM / EU PWP. This is a key communication document for everyone involved in the project. According to *Young, (2003:137)* the key stage owner accepts the obligation for the key stage to confirm that:

- The work required is identified at task level
- The dependencies are clearly identified
- The estimates of duration are accurate
- The work gets done on time to quality needed
- The work conforms to quality assurance procedures and requirements
- Regular monitoring is maintained
- Regular accurate status reports are issued
- Team member will be promptly alerted to problems and issues.

4.3.4.7 Prepare activity schedule & work plan budgeting and cash flow

Upon identification of activities, time and costs are to be estimated – refer appendix 3 -annex 4 and annex 2. At this level individual work items are not identified. Past experience seems to have been a good starting point for developing time and cost estimates. *(Gray and Larson 2008:117)* The sources which might have been utilized to help derive accurate estimates are: *(Young, 2003:142)*

- The experience of others
- The expert view
- Historical data from other projects

The experience, expertise and historical data from NRA engineers and the consulting engineers played role in providing the global rate for construction and rehabilitation activities. For the PMU – support staff and site staff, EU / EDF rules and labour laws of Malawi were applied. *"The PMU will be led by Africon, who will be supported by specialists in the accounting, environmental, roads engineering as well as the forestry and irrigation fields. Africon will supply a team of three (3) expatriate technical professionals in terms of the ToR. Africon also provides the roads management component staff. Two Malawian consultants i.e. Chapita Consulting and David Consulting respectively provide 2 and 3 engineers to assist in the district offices for roads activities. The NRA will supply five (5) engineers, one for each of the five districts in which the PMU will be operative." (GoM / EU PWP – Malawi - Inception report 2001: 7, 10)*

Having the time estimates a schedule of activities was developed *(appendix 3 - annex 4).* Bar (Gantt) charts have been used whose list of activities and sequence (logic) will have been defined and gathered from technical experts and the project team member's own field experience. *(Burke, 2010: 177, Harris and McCaffer, 2008:68).* The activity schedule depicts the project activities that must be completed, the logical sequences, and the interdependencies of the activities to be completed and in most cases the times for the activities to start and finish along with the longest path through the network. *(Gray and Larson 2008:145).* The schedule is the framework for the project information system that will be used to make decisions concerning project time, cost and performance.

According to *Burke, (2010:225)* a project cash flow is a document that models the flow of money in and out of the project's account. Appendix 3 - Annex 3 depicts that time frame for this project was monthly maybe to coincide with the normal business accounting cycle. These are client's expenses in term of invoices from contractors, suppliers and other professional services required making the products. As the project cash flow statement is an integral part of critical path method which combines the work break down structure, the estimate (budget), the project schedule, the procurement schedule and resource planning, the programme cash flow (annex 3 and annex 4) has been assumed to be linear. The costs are to be uniform over the duration of the activity.

Another method of modelling the project cash flow which was noted is the use of an S-curve analysis as indicated by Appendix 3 - annex 3 – work plan 2b Imprest Account Cash flow chart, which provides a link between budget and the timeline. Experience has shown that a project's accumulated costs tend to follow an S-shape curve. *(Burke, 2010:230).*

It has also been observed that a hybrid – phase estimating approach, which begins with a top – down estimates for the project and refines estimates for phases of the project as it is implemented, was utilized. *(Gray and Larson 2008:128).* According to *Harris and McCaffer, (2008:74)* the scheduling has been given time – limited resource considerations. Time analysis provided the minimum time possible for completing the project. Minimum has been taken as time-limit; adjustments are therefore made in the timing of any activity that may affect resource requirements.

4.3.4.8 Establish funds disbursement procedures

Funds have to reach the project sites in villages at the right time. In many countries such a convergence of financial flows has proven difficult. For example, in India, central government finances have to move from New Delhi to districts where these funds have to be matched by funds released by state governments. And from the districts the combined sources of funds have to move to villages where a workfare project is being implemented. In practice, often enormous delays occurred and actually funds are released from the center during the last quarter of the

financial year which incidentally happens to be agriculturally busiest season when there is little need for a workfare programme. The result has been low off take of the programme *(Saxena and Ravi, 2006).*The project Imprest account for GoM / EU PWP was managed by the PMU. Initial appropriation for EDF project Imprest account was that upon approval of the work programme at the request of the PMU and after having provided the Ministry of Local Government with a bank guarantee of at least the amount of advance requested, an initial advance sufficient to cover the first three months of the implementation of the work programme would be transferred to the EDF project Imprest account.

Replenishment of the accounts could be made upon proof from the PMU at the end of every two months or as soon as the balance of the funds fell below 75% of the initial appropriation. To that end the PMU provided a summary list of expenditure and the supporting documents. Transfer of funds could be authorized after examination and approval of previous expenditures. The contingency was used only on application to the Programme Steering Committee Chairman and at the sanction of the EU head of delegation

For Closure of accounts, the PMU could submit a final expense report within six months following the end of the period covered by the work plan. After the approval of the final expense report and eventual reimbursement or transfer to the consecutive work plan of the unused funds, the overall imprest account commitment was to be closed.

4.3.4.9 Establish procurement procedures

According to the project under discussion – GoM / EU PWP, the procurement procedures were set to make sure that even small scale contractors should be able to tender. The standard tender documents of the National Roads Authority (NRA) was used with adjustment of the contents to customise the contract documents for labour intensive construction for the road rehabilitation works. The intention was to simplify the Instruction to Tenderers so that unsophisticated tenderers may participate and compile competent, adequately priced tenders. All contract tenders were public tenders and advertised in local newspapers, allowing any eligible tenderers to tender for the works. The intention was also to display tender invitations at the District Assembly offices. Eligible tenders were to be those registered with the National Construction Industries

Council (NCIC) of Malawi as a pre-qualification. A database of all local contractors registered with the NCIC was obtained for tender evaluation purposes. A database would also be obtained from the NRA on contractors work performance to evaluate their overall performance, experience, expertise and management.

- Feedback on the Contractors performance on completion of the contracts would be forwarded to the NRA for updating of their performance database. It was envisaged that a normal procurement methodology (see table 4-23) in accordance with the EDF procedures and guidelines would be pursued for all contracts to be let:
- Completed tenders were thoroughly examined, evaluated and compared in terms of a standardised evaluation procedure;
- A concise Tender Evaluation Report would be drafted with recommendations and motivation for the award to the recommended successful Tenderer;
- The Tender Evaluation Report was then submitted to the Technical Steering Committee for the award of the contract to the recommended Tenderer;
- Contracts were to be awarded after consultation with the NRA.

Table 4-23: Procurement Methodology (Amounts in Equivalent EUR)

Type of contract	Direct agreement	Three quotations	Restricted tender	Accelerated procedure	Open tender
Supplies	0 – 5,000	5001 – 25,000	25,001 – 100,000		100,001 – 300,000
Works	0 – 250,000		250,001, - 1,000,000	100,000,001 – 5,000,000	
Services		0 – 150,000			

Exchange Rate (2005 prices)
1EUR = 165 Malawi Kwacha

For contracts included in the overall imprest account commitment the following procedure was being followed for approval and signature of contracts:

- For the contracts awarded on the basis of 3 independent quotations, the commission approval could be obtained on the short listed companies or experts prior to the request of quotation

- For contracts to be awarded on the basis of restricted tender, accelerated procedure or open tender, the commission approval would be obtained on the tender dossier. After publication of the tender, receipt of the offers and evaluation, the commission approval was to be obtained prior to the award of the contract.
- A contract was to be signed by PMU on behalf of the Ministry of Local Government.

After setting the procedures, Procurement Plan (table 4-24) could be produced to establish the delivery dates of procured materials and services for activities

Table 4-24: Procurement Plan (IGPWP - Malawi)

Item	Estimated Cost MK	Procedure	When Expected
Road rehabilitation contracts	104,709,000	Simplified as approved	Launched in PE 2 with suspension clause
Bridge works contracts	68,400,000	Simplified as approved	Launched in PE 2 with suspension clause
Forestry consumables	7,370,000	Local open	Launched in PE 2 with suspension clause
Irrigation tools and inputs	5,302,825	Local opening	Launched in PE 2 with suspension clause
Irrigation tools and inputs TP	2,789,325	Direct	March 2008
45 motorcycles for DAs	17,712,000	International open	Launched in PE 2 with suspension clause
Protective clothing	1,200,000	Direct	February, 2008

Exchange Rate (2005 prices)
1EUR = 165 Malawi Kwacha

4.3.4.10 Establish audit and evaluation procedures

The audit / evaluation procedures identify the steps to be taken to secure certified public accountants / evaluators and detail the time interval to review and inspect the financial records thereof and performance of the project. An independent audit of the project accounts could be performed after every two months. The PMU ensured that auditors have access to all relevant financial records and accounts including those from the projects own resources. An interim evaluation was to be carried out at the period (one year) covered by work plan no 2.

4.3.4.11 Establish management information system

Installation and maintenance of a programme management information system (MIS) is critical to the successful implementation of a Monitoring and Evaluation System (M&E). In the work plan no 2a for GoM / EU PWP, it was noted that during the previous work plan no 1, MIS had been established and that relevant data to measure the activities for components were being captured in a database. It was planned that an external consultant would be appointed to develop and implement a Monitoring and Evaluation System. Allowances were made for such an undertaking.

4.3.4.12 Develop environmental plan

In recognition of the tremendous environmental impact of construction activities, the environment plan sets the guidelines for environmental obligations and activities to mitigate the environmental impacts associated with labour based construction projects (*Malawi, GoM / EU PWP).*The PMU Terms of Reference (ToR) required that an integrated approach to environment management within the PWP must be provided for. The initial task was to conduct Environmental Impact Assessments (EIA). The specific output from the EIA was the Environmental Management Plan. Known programme activities which had impact on the environment included:

- Gravel extraction from existing and new borrow pits
- Drainage discharge
- Bridge fill and approach protection
- Traffic speed and dust in trading centres
- Clearing of grass along river banks
- Forestry protection
- Tree planting.

The plan was to be inline with ISO 14000 so that it was able to distinguish between what it controlled and what it influenced in terms of environment.

4.3.4.13 Prepare routine maintenance plan

The achievement of the programme's primary goal of poverty alleviation through labour intensive contraction on the roads works greatly depended on the participation of the local

people. Road maintenance created an ideal opportunity to involve a number of people along the length of the road to participate. To achieve this, Roads Maintenance Clubs were proposed to collectively assume responsibility for a predetermined length of road previously rehabilitated. The intention was to use some of the people initially employed by the contractor to form a club and take over the maintenance work. Due to the low risk with this kind of maintenance model, insurance, sureties and sophisticated tender rules and conditions of contract were not introduced.

4.3.4.14 Revise the logframe

As discussed above, the activities and means are known. The logframe from the feasibility studies (phase two) is revised by adding these inputs. During the scoping, the objective is also reviewed. All this information is updated on the original project concept.

4.3.4.15 Review work plan

At this point, now that the base work plan is complete stakeholders are called for to review and approve the plan *(Young 2006:162).* The first work plan for GoM / EU PWP was approved by PSC at the end of July 2001 and contained detailed descriptions and cost estimates of those activities that are expected to be performed within the first eight months of the full implementation phase of the programme.

4.3.4.16 Summary

The review of the Malawi experience with phase three - preparation of work plans of Process Protocol for labour based works has revealed that the purpose of this phase is to:

- Define actions to be undertaken
- Identify times at which the actions are to be done
- Identify stakeholders to be involved
- Ascertain resource requirement for the actions to be implemented.

The Goals are:

- Detailed planning is completed and major milestones for deliverables are established.
- Gain full financial approval for the project
- Gain funding for the specific work plan
- Gain approval to proceed to phase 4

The work plan task ensures that planning for all phases is undertaken so that delays in vital inputs do not occur. Organizational and administrative procedures together with feedback response to policy makers will have an important bearing on implementation. Concern for detail and proper planning during work planning can save a great deal of time and resources during later phases of the project. At this point, the actual work of the project is about to begin. Work plans funds are approved and released to the implementing agency. Preparation of production information on which the construction activities will be based becomes into play. The request for approval is made to pass through *Phase Gate three* and the launch of the project into *Phase Four* - preparation of production information. The next phase looks at preparatory works that enables work plans to be put into operation.

Table 4-25 summarises the processes and deliverables for phase three and Figure 4-12 gives the process flow diagram.

Table 4-25: Phase three processes and deliverables

Processes	Deliverables	Country Experience
Delegate Authority		Malawi GoM / EU PWP
Set Institutional Framework	Institutional Arrangement (updated)	
Recruit Project Core Team	Organogramme (updated)	
Establish the Organization Structure		
Verify the Scope	▪ Project Brief (updated) ▪ Execution Plan (updated)	
Identify Project Activities	Activity Plan	
Prepare Activities Schedule	Gantt Chart	
Allocate Responsibilities	Responsibility Chart	
Prepare budget / Cash flow	Cost Plan (updated)	
Establish Funds Disbursement Procedures	Financial Management Plan (updated)	
Establish Procurement Procedures	Procurement Management Plan (updated)	
Establish Audit Procedures	Audit Management Plan	
Prepare Maintenance Plan	Maintenance Plan	
Develop Environmental Plan	Environmental Plan	
Establish Management Information System	M & E System	
Review the Work Plans		
Revise the Project Concept	Project Concept (updated)	

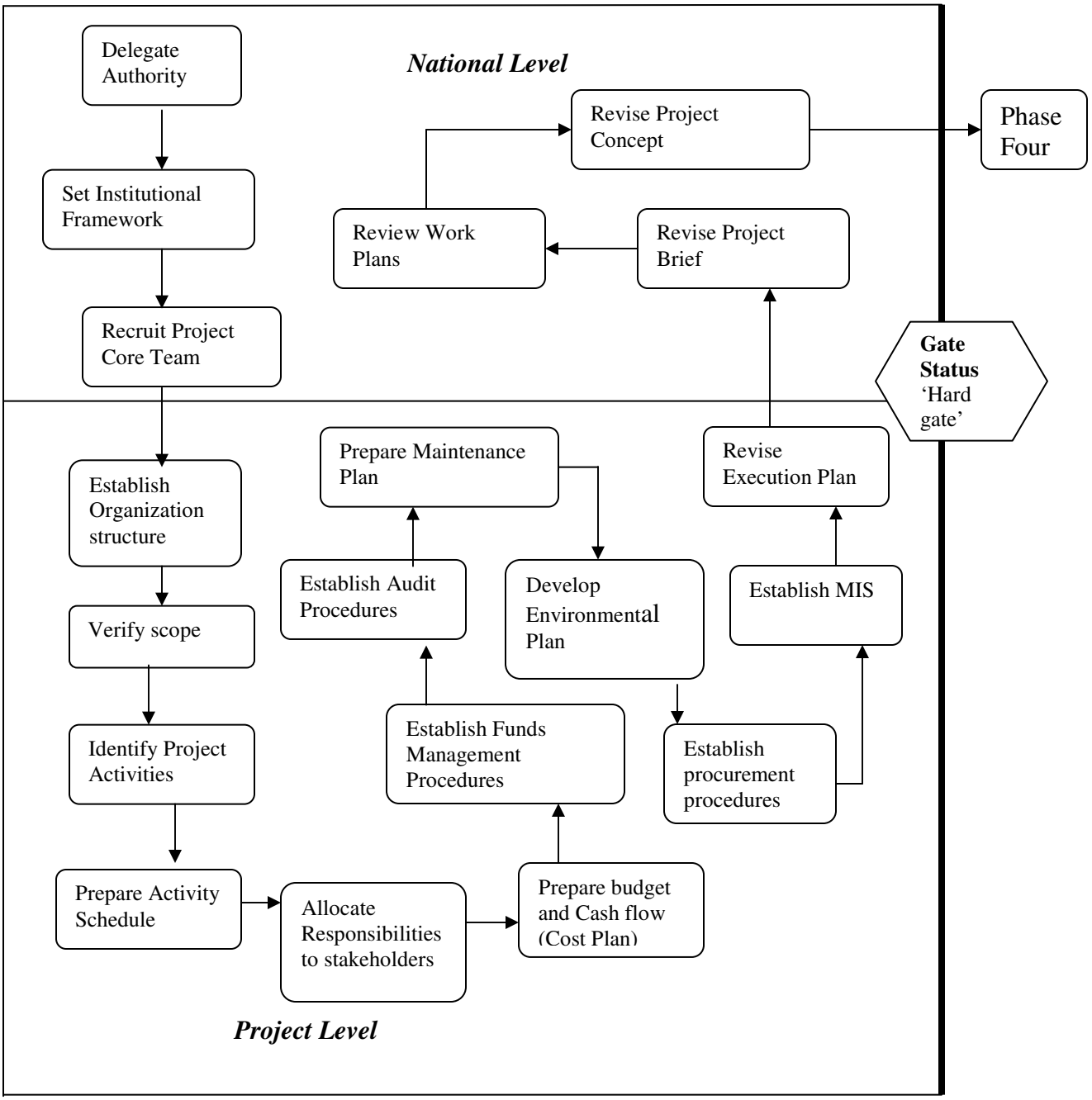


Figure 4-12: Phase three process flow diagram

4.3.5 Phase Four -Developing Production Information

4.3.5.1 Introduction

The next phase on the Protocol Process (chapter 2) after having designs, procurement and full financial authority (phase six) is phase seven – production information. For management processes of labour based works, this is phase four and is commonly known as pilot phase. The pilot phase comes following approval of the work plan (phase three) and that funding is made available to kick start the works. There is assurance that resources will be committed to the project. This section looks at processes that take place before the actual activities of labour based works can start. It describes the activities that are involved in gathering information which will assist in production of the works. The discussion shall be based on the following Process Protocol activities (see Appendix 1) and the general practices and experiences found in literature on management processes of labour based works.

- Finalize project brief
- Finalize business case
- Finalize cost plan
- Finalize coordinated project model
- Start enabling works
- Finalize health and safety plans

4.3.5.2 Recruit and orient project team

The process of selecting and recruiting project members will vary across organizations. Two important factors affecting recruitment are the importance of the project and management structure being used to complete the project *(Gray and Larson, 2008:353).*The organization structure of labour based projects differs from that of equipment based projects. The size and structure of the organization will vary with the size of the project. *(de Veen and Thagesen, 1995:351).*

de Veen and Thagesen, (1995:351) proposed the following number of supervisory staff that would be needed for a project employing about 1000 workers.

- 1 no Engineer
- 3 no senior supervisors
- 10 – 12 no site supervisors
- 40 – 50 no gang leaders

Johannessen (1999:5) in Cambodia noted that in order to ensure a monthly average output of 1.5km of road rehabilitation using labour based appropriate technology, the core staff required from a Contractor is as shown below:

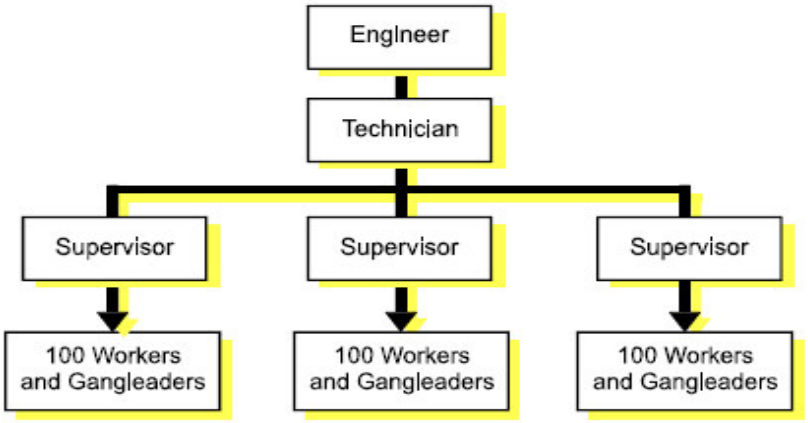


Figure 4-13: Organisation structure for site personnel

During Programme Steering Committee Meeting No 1 held at Cresta Hotel in Malawi for Income Generating Public Works Programme (IGPWP), it was reported that key staff have been recruited and were in place. 97 of these were retained from the former programme and 15 were new. This was the progress on the activity of provision of sufficient qualified personnel for the programme.

In Cambodia due to the geographically dispersed nature of the works, responsibilities for implementation were decentralized to provincial authorities. Because the capacity of the provincial authorities was practically non-existent, an entirely new civil works organization needed to be established in each of the provinces. This involved developing more or less from scratch the technical, managerial and administrative capacity in each of the provincial offices of Ministry of Rural Development (MRD). For the technical component, engineers, technicians and supervisors were recruited and trained in all aspects of civil works planning, execution and

supervision. Equally, administrative and financial support staff were engaged and trained to achieve fully independent and capable province-based rural infrastructure works agencies. For these teams to work effectively, a complete set of administrative, financial, planning and management procedures were developed.

A small unit at central level coordinated the works in the provinces. The unit was mainly responsible for overall planning, co-ordination of funds disbursement, reporting and Monitoring, development/ introduction of new guidelines and procedures and staff training. *(Tusanasorn and Johannessen, AB 14, 2002:9)*

4.3.5.3 Launch the project

Upon the Project Steering Team (PST) approving the work plan and schedule, the project is ready to start. The key stage owners for the early stages should identify all the tasks to be carried out in each. This task list is the basis of ensuring that there is commitment. Any changes by the PST must be incorporated. Work plan charts for the early key stages must be prepared and deriving of a milestone schedule for the project should be made. A decision on a progress reporting process with templates and agreement on a meeting schedule must be made. A launch meeting must be held. The purpose is to get all important people who are involved with the project and the plans in detail are explained. In attendance must be the project sponsor, beneficiaries, other stakeholders and the project team. *(Young, 2003:169 – 189)*

The programme "*Employment Creation in Municipal Services Delivery in Eastern Africa-Improving the living condition and providing jobs for the poor"* was launched officially by Hon Mizengo Pinda, then the Deputy Minister, President's Office, Regional Administration and Local Government on 21 January 2004. The two year programme with an immediate objective of increased *decent employment and improved living and working conditions for the urban poor* had been carrying on and up scaling of the good work done by the previous project of *"Solid waste Management in Dar es Salaam" 1998-2003. (Programme Implementation Final Report, 2006:5)*

According to Programme Steering Committee Meeting No 1 held on November 11, 2005 at Cresta Hotel in Malawi for Income Generating Public Works Programme (IGPWP), Minute no PSC / 1/ 11 indicate that the objective of launching the project was to inform all stakeholders about IGPWP and to publicize the contribution of the programme in the reduction of poverty and to officially mark the start of the implementation of the programme. The launching took place in Ntcheu district on 19 January, 2006. The invited guests were European Union (Sponsor), National authorizing Office, Ministry of Local government and rural Development and other line ministry with links to IGPWP, District Assemblies (DA), Traditional Authorities, and members of the local community, media and other stakeholders – National Aids Commission, Malawi Social Action Fund and representatives of NGOs.

4.3.5.4 Conduct baseline survey

A baseline survey aims at establishing status of households in the project area before the start of project activities and provides information to measure the impact of project activities on household. *Rozemuller, Thou and Yan, in 2002* and *Cowi Consultant, in 2006* conducted baseline survey in Cambodia and Malawi respectively before labour based works were implemented. In May 2003 a baseline survey was conducted in Lao PDR to collect socio-economic data about the households in the area *(Donnges 2003)* ; later in December 2003 a follow-up 'snapshot' survey was taken of life along these roads *(Pearse, 2003).* Data collected depends on type of investment being looked at.

In Cambodia, the baseline survey collected data on travel time. It aimed to measure the detailed characteristics of travel and transport at household level in a Cambodian rural commune basically following the methodology used in earlier ILO socio – economic studies. The main reason for carrying out this research was to obtain baseline data on travel and transport trends that will help to direct Rural Transport Infrastructure (RTI) investments. In March 2000, the IRAP planning process was introduced in Angkor Thom District, leading to a list of prioritised investments. The priority investments for Peak Snaeng Commune included tertiary road improvements and construction of a large causeway. These investments were undertaken in 2001. This baseline survey on household travel and transport was carried out to document the impact of these infrastructure investments on the inhabitants of Peak Snaeg Commune after the

investments were completed, the survey would be repeated to measure the impact on the accessibility situation in Peak Snaeng.

Cowi consultants were hired in 2006 to conduct a baseline survey for Income Generating Public Works Programme (IGPWP) in Malawi. The IGPWP was a European Union labour intensive programme aiming at promoting income generation as well as productive activities for the rural and peri-urban poor by assisting them to promote sustainable livelihoods. The programme had three components – forestry, irrigation and rural roads. Roads construction was also a major component as was its sister programme – GoM / EU Public Work Programme. The baseline data were collected from potential communities of Programme Estimate (PE) 2 of IGPWP. The objective of the baseline survey was to collect data in the beginning of the project to provide a set of data against which comparisons could be made to measure effectiveness and impact at later stages in the programme implementation and possibly ex-post.

The methodologies that were used for collection of data were survey questionnaire which was based on key questions from different national surveys conducted by the National Statistics Office, Ministry of Economic Planning and Development, etc. A representative sample of 1530 interviews were conducted in a representative sample of the proposed PE2 areas in the four zones and 15 districts taking into account the potential areas in which the roads, forestry and irrigation components might be working. In all selected villages sample households were selected using a transect walk approach. In small villages every third household and large villages every fifth household was selected up to the total sample size required. Either the head of the selected household or a responsible adult was selected for interview.
Indices used for analysis were Profile of the potential beneficiaries, Social – Economic aspects of the beneficiaries, Living conditions, Roads, transport and transportation factors like travel time.

The data collected was used to design, roll out and make operational a works database / Management Information System and monitoring and evaluation system, capacitate IGPWP PMU and DAs to monitor programme activities and make IGPWP MC systems compatible with the needs of DAs and where relevant Monitoring and Evaluation (M&E) system and indicators in use in Malawi. *(Cowi, 2007)*

4.3.5.5 Building contracting capacity

Since the 1960s, developing countries have used two types of production arrangements to carry out civil works: force account and contracting. Contracting itself has two approaches: using established contractors and developing small-scale contractors. In countries that have used force account, public agencies have supervised, managed and controlled their machines and labour directly. Countries that have used established contractors have either relied solely on foreign firms to execute works or have encouraged the establishment of a domestic contracting industry. Ghana is one of the few African countries that, after independence, began developing a local road contracting industry.

Countries that have traditionally used small-scale or "petty" contractors have tended to support policies that package civil works projects into a large number of small contracts, encourage subcontracting, and limit the importation of heavy equipment. Such countries are predominantly found in Asia. India, for example, supported petty contracting by discouraging small contractors from equipping themselves with heavy machinery and by packaging civil works projects into a large number of small contracts varying in value from $10,000 to $100,000 (1976 prices) per year *(World Bank 1976)*. Such small contracts are not only appropriate for small-scale contractors; they also deter large contractors from competing. Unlike the experience in a number of Asian countries, supporting the development of small-scale contracting is relatively new in African and Latin American countries. *(Stock and de Veen, 1996:25).* Lesotho had been using two systems: force account for 35 per cent of the maintainable network, and contractors for 65 per cent. Contractors appeared to be more cost-effective. (*ASIST Bulletin no5:1996).*But in many ways, the small-scale contractor models provide the only long-term answer to getting value for money. Although this approach may appear to be less efficient initially, programmes that develop small-scale contractors will eventually achieve longer-term economies from increasing the competitiveness of the industry *(Henriod, 1984).*

There are however, some potential problem areas with contracting:

- contractors need to be supervised
- payments to contractors need to be made on time

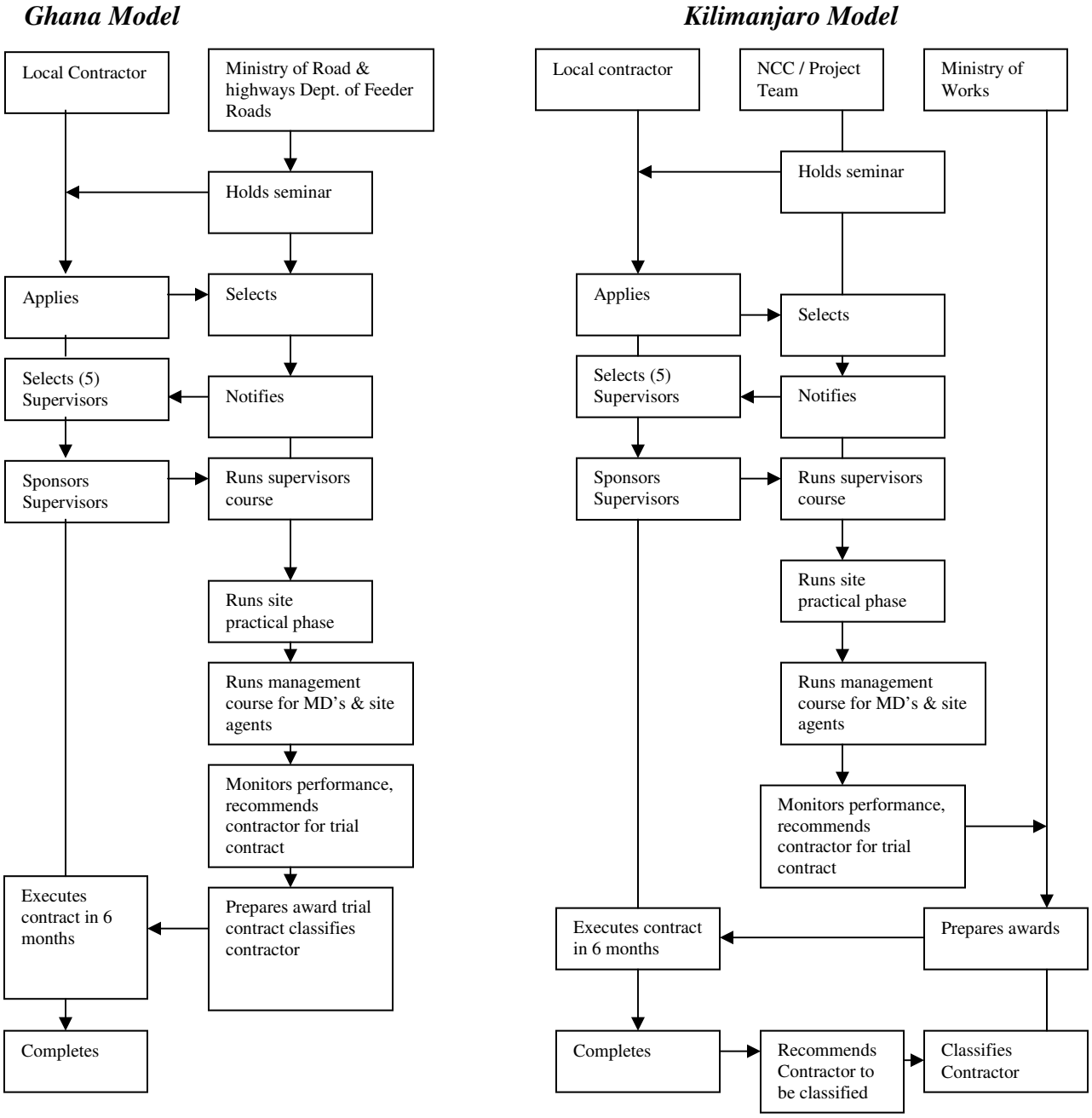
- the technology is particularly suited to the smaller, locally based contractor with few resources and little creditworthiness. Such contractors may find it, very difficult to finance and establish themselves without considerable assistance
- small contractors are generally inexperienced in the effective management of a large labour force. *Training is therefore needed.*
- smaller contractors usually have little experience in working with specified technical standards. *This is another area requiring training.*

Training for labour based contractors is ongoing or planned in Kenya, Ghana, Tanzania, Uganda, Madagascar, Zambia and Sierra Leone. Generally, this training has been successful and the achieved output of trained contractors has been encouraging, in terms of quality and productivity. Efficiency in the execution of work has also improved, due to the increased competition *(Nilsson, AB 2, 1993:1).* Hence there is no little emphasis placed on developing the management and supervision capacity required for the efficient use of labour based methods and delivery of good quality infrastructure assets. Training is now a prerequisite for both the contracting authority and the contractors. The processes required to develop supervising and contracting capacity include the following steps:

- Establish the training institution
- Assess the training needs
- Identify and select trainees
- Develop training materials
- Conducting actual training

4.3.5.5.1 Establish the training institution

The Ghana and Tanzania models present options on how to institutionalise training. The flow charts (Figure 4-14) below outline the institutional framework for the development of contractors in both Ghana and Tanzania. Whereas the Ghana model involves two players, namely the Department of Feeder Roads and the Contractor, the Kilimanjaro model involves three players – Ministry of Works (MoW), the contractor and the National construction council (NCC), which is the Implementing agency. Thus, unlike Ghana, in Tanzania most decisions taken by NCC will have to be referred to MoW for approval. *(Osei - Bonsu, AB 2, 1993:5)*



Source: Osei - Bonsu, AB 2, 1993:5

Figure 4-14: Training Models - Ghana and Tanzania

4.3.5.5.2 Assess training needs

The success of any labour-based road construction project is dependant in the final analysis on team effort. Each member of the team has a part to play in ensuring the smooth running of the project. When a training programme is being planned, for either a new or an existing project, the needs of each of the members of this team must be considered, and the training designed to ensure that they all work effectively together. *Markland, (AB 4, 1995)* recommends three steps for conducting needs assessment for training. These are:

- The essential step in the assessment of training needs is the production of an organizational chart for the project. This chart should show the relationship between each of the grades of staff and should define the flow of responsibility. All members of the construction team should be included. It is important that this organizational structure is defined, agreed and understood by all parties before the assessment advances beyond this first stage, so that everyone is aware who is to be trained, and what they should be capable of doing on completion of that training.
- The next step is to define the responsibilities of each of the staff grades by producing job descriptions for all grades of staff who appear in the organizational chart. The job description should list all the duties and responsibilities of the staff member. It is important that the list is complete, and it may be necessary to amend it as a result of visits to the sites. Care should also be taken to identify administrative and reporting functions as well as the basic engineering tasks. The job descriptions define the tasks that are to be performed by each grade of staff.
- The next in the training needs assessment is to define what skills are necessary to perform those tasks effectively. The production of learning objectives from the job description is straight forward enough for technical operations, as all that is required is to note down the skill needed to perform that task. However, tasks that are managerial or decision making in character require more careful consideration because, in addition to knowledge of the task, background information and attitudes are also important factors and should be included in the learning objectives. When dealing with skills outside your own area of experience, consult with colleagues who have specialist knowledge of those skills. *(Markland, AB 4, 1995)*

4.3.5.5.3 Identify and select trainees

The next step after assessing the training needs is identifying and selecting trainees. Suitable selection criteria depending on needs assessment is to be developed. The criteria should be able to screen those with interest in participating and are qualified and must stress on strengthening a suitable constructing industry. The criteria that are used for identification and selection of trainees determine the duration for training and type of training materials to be presented.

Since Lesotho, (*Andersson, AB 2 1993:3)* had no existing domestic civil works contractors and an apparent group to recruit the trainees from, it meant that the training, in addition to management aspects, also must fully cover the basic technical aspects of road maintenance. Consideration was given to three alternative sources for recruitment of routine maintenance and regravelling contractors.

- Firstly, existing domestic building contractors having the advantage of understanding the competitive nature of the construction industry but lacking experience and plant for the road sector.
- Secondly, haulage contractors owning tipper trucks which could make them competitive for regravelling, although their experience in building contracting is limited
- and thirdly, Labour Construction Unit (LCU) road supervisors - particularly Senior Technical Officers (STOs) and Technical Officers (TOs) - having relevant technical knowledge and experience but might lack capital and business experience.

The selection criteria currently in use in Ghana was evolved over a number of years after some modifications had been made to the original one developed for the programme. The criteria for selecting Contractors takes into consideration the following factors: *(Illi, pro 1993)*

- Contractors' ownership of Equipment;
- Contractors' fixed assets;
- Supervisory Capacity of the Contractor vis a vis the education/training background of staff;
- Experience of the firm in roadwork;
- Educational background of the Managing Director

Contractor's trainees are not screened before being accepted for training. The Department of Feeder Roads only stipulates that a selected Contractor submits certificated of 4 trainees with a minimum educational background of GEE O' level.

In Tanzania, the factors listed in Ghana above with some slight modifications were considered in establishing the selection criteria for contractors. Since most of the potential Contractors who responded to questionnaire were Building Contractors, the factor on experience in roadwork was replaced with the number of workers handled by the Contractor on building projects. The marking scheme was therefore skewed to favour mainly the up and coming Contractors bearing in mind that the major thrust of the project is on maintenance for which most of the established Building Contractors do not find attractive. A minimum educational background of form four was adopted (equivalent to the GCE'O' level in Ghana) and the trainees were interviewed and tested in basic mathematics before being accepted to the first training course *(Illi, pro 1993).*

4.3.5.5.4 Develop training materials

Following the selection of the trainees in Malawi, an assessment of the trainees was carried out by the Labour-based Trainer/Expert and RAMPA Engineer to consider the course material suitable for the calibre of candidates selected. A training programme involving classroom and field practical training was developed. The Labour-based Technology expert prepared training material in form of lesson plans and lecture notes, which were later approved by Malawi Rural Travel Transport Programme (MRTTP) *(RAMPA, Appendix 2, 2006:7).*
In Tanzania, as all selected participants were either university graduates or holders of Polytechnic higher diplomas, the ILO Engineers manual and the MRP Technical Manual were considered appropriate as course documentation for the contractors. In addition to this, hand-outs were prepared for special subjects such as planning, reporting, pricing contracts documents.

For the Foremen, the Kisii Training School Manuals (Overseer, Technical Manual, Headman's Maintenance handbook) and selected hand-outs were used as background material. Specific training materials for road contractors are not available and should be developed *(Illi, pro 1993*).

According *Johannessen, (2000:55),* the curricula for contractors which will be engaged in labour-based road rehabilitation works should cover the subjects as outlined in Table 4-26 below. Although the contractors may recruit site supervisory staff with past experience in this field, some managers and supervisory staff will through this training receive their first introduction to labour-based road works technology.

Table 4-26: Training content for labour based works

Subject	Contents
Planning	how a labour-based road works programme is planned at different levels, planning responsibilities of the various levels of staff, work plans, organising site camps, planning of tools, and the recruitment and organisation of casual labour
Reporting	administrative control of a work site, production and quality control
Work Organisation	sequence of labour-based work activities, gang balancing, instruction and supervision and incentive schemes selecting appropriate tools, how they are handled, their use and maintenance and store-keeping
Tools	
Survey and Setting Out	setting out horizontal and vertical alignments, cross sections, curves and how to use various setting out equipment such as profile boards, templates and string line levels
Clearing	clearing the alignment of vegetation and boulders
Drainage	the vital importance of a well functioning drainage system, how to construct side and mitre drains, road camber, catch water drains and scour checks
Earthworks	Earthworks how to measure and estimate earth works carried out by labour, the organisation of excavation, levelling, hauling, loading, unloading, filling and spreading, compaction and erosion control
Compaction	presents simple soil mechanics, optimum moisture content, indirect compaction, direct compaction and the effective use of hand rammers
Gravelling	how to organise gravelling operations, and testing of gravel quality
Maintenance	Maintenance the organisation and implementation of the various activities on labour-based routine, periodic and emergency road maintenance, and the required tools and equipment
Structures	Structures rehabilitation and maintenance of small bridges, drifts, causeways, culverts and box culverts

Source: Johannessen, 2000:55

4.3.5.5.5 Conduct training

Having developed training materials, the trainees undergo training. The training package consists of three main phases namely.

- Classroom training
- Field training
- Trial contracts

The package is designed to ensure each progressing phase experienced more difficult and complex tasks. The review of experiences with conducting training in Ghana and Malawi will follow the above steps.

Ghana - Having identified some of the key problems confronting the construction industry in Ghana to be the local contractors' lack of management capabilities in the efficient use of financial, equipment, material and personnel resources and the cumbersome procedures in the processing and honouring of payment certificates, Department of Feeder Roads (DFR) with the assistance of the ILO technical team addressed the issues pertaining to the contractors by drawing up a training package (Table 4-27).

Malawi - The Training Programme for Small Scale Contractors (SSCs) under RAMPA project had two Modules, starting with Theory. The other Module was Job - on- Training in the field (Practicals) followed by award of Trial Maintenance Contracts (Table 4-27).

Table 4-27: Country experience conducting training

	Ghana	Malawi
Classroom training	This phase involved seven weeks of intensive training using ILO training manuals. Topics treated included mathematics related to road works, the basic principles of road construction and maintenance, equipment and man management as well as the financial management of firms which was covered by lecturers from a local bank. Trainees for this phases comprised of foremen and supervisors designated by the 8 contractors and staff from DFR.	This training was designed for two weeks and was tailored to equip trainees with basic knowledge of mathematics for them to know how to calculate quantities of their works and plan properly in assigning tasks in their day-to-day works, road construction terminology, work productivity and recommended task rates for various activities, work programming, road maintenance and rehabilitation. Trainees were also briefly taught management of construction projects, which covered pricing and bidding, tendering procedure and contract implementation. The group consisted of twenty one SSCs, and four District Assembly staff who would be future supervisors.
Field Training	The objective of this phase was to help the trainees develop and acquire the practical skills in the effective use of labour based techniques. The 16 week programme involved the construction of a 10 km model/demonstration road under the DFR Project Management Team (PMT). The trainees were made to work for a short period as workers in various activities before being made gang leaders and finally as foremen supervising each of the many activities as weekly rotational basis. The trainees participated in weekly site management and performance evaluation meetings which were considered part of the training. Both the PMT and the trainees had the opportunity at these meetings to exchange ideas and clarifications were given on issue which were not fully grasped during the classroom training. At the end of this phase, the World Bank agreed to buy additional sets of equipment as a result of the proven capabilities of all the contractors	Field Practical Training was tailored to give trainees a chance to apply the knowledge gained in class on actual works. Practical training was designed to run for 2 months and covered the following operations: setting out**,** site clearing earth works, construction of low-cost drainage structures such as concrete pipe culverts, stone-pitched drifts, splash and timber-decked bridges and gravelling. The RAMPA Team in the company of DA staff and SSC Trainees carried out field assessment surveys to prepare relevant Bills of Quantities and estimates for each selected site. Trainee SSCs then mobilized to their respective project sites with RAMPA having bought all necessary tools to be used by trainees on each training site. Their first task on their respective sites was to recruit labour for works by using the "lottery system". During this period a lot of forms were used on site during the field practicals for the purpose of planning the works and reporting which are very important for future work planning. The field training was designed to give the Trainee Contractors a real contract situation hence the production of Contract Documents provided guidance in execution of the field practicals. The Contract Documents consisted of the following: Agreement forms; Contract Data; Conditions

		of Contract; Specification for Works; Drawings; and Priced Bill of Quantities; Trainees were subjected to demonstrations of labour-based technology in carrying out works according to laid down specifications as stipulated in the Contract Documents by the Experts. The first 4 weeks of the field practicals was for demonstrations and the last 4 weeks was to assess every participant on how he/she was applying the knowledge gained from the expert. The Trainees were assessed using the criteria designed field assessment form. Field practicals carried 60% of total course marks. Field and theory classroom scores were aggregated for the award of certificates.
Trial Contracts	The first and second stages of the contractor development phase actually developed the individual's capacity to effectively apply the labour-based techniques. Hence, the objective of the Trial Contract Phase aimed at assisting the contractor to develop the capacity of the firm to effectively manage a labour-based road construction of the 4 contractors was awarded 5 km of roads to rehabilitate within a period of 4 months inclusive of mobilization. The contractor was fully responsible for the progress and quality of works whilst the Project Office provided some services which allowed the contractor to concentrate on managing works at the site. Prior to the start of the road works, each contractor with the assistance of the PMT prepared a work programme in the form of a Time Location Chart which served as a control tool in the execution of works *(Osei-Bonsu, 1992).*	The sections of roads identified for trial maintenance contracts to be executed ranged between 2 to 6km. The RAMPA Engineer and District Roads Supervisor carried out inventories on all the proposed sites. The Team produced Schedules of Works and established the Engineers cost estimates for all the proposed sites. RAMPA drafted an appropriate contract document, which contained clearly established obligations for both parties, and using Schedules as the basis for measuring completed works There was no bidding for the Trial Contracts. The seven contracting companies in the seven ADCs had one section of road maintained. Agreement Forms for these Trial Contracts were signed with contract duration of 2 months for every site. RAMPA deposited money for mobilisation to every SSC's Bank Account on 26 August 2005. Local labour wage rates was MK60/day **(***RAMPA, Appendix 2, 2006:7- 27).*

Following the success at the trial phase, the contractors are encouraged to register with relevant construction regulating bodies. In Ghana, Ministry of Roads and Highways had been registering contractors within the appropriate category based on their capacity and experience. With the start of the contractor development project a new classification of labour based contractor was introduced, restricted to those contractors who had successfully completed training programme. These are members of the labour based contractors association (*Bentall, Beusch and de Veen, 1999:53).*

4.3.5.6 Review and modify contracts documents

Both the FIDIC Short Form of Contract and the NEC Short Contract offer attractive alternatives to full FIDIC Conditions of Contract for the development of small and labour based contractors in the road sector. The World Bank Procurement of Works for Smaller Contracts is not significantly less complex than FIDIC, and is mainly geared to International Competitive Bidding procedures. The ICE Minor Works contract is really too limited in scope for the type of work envisaged *(Stiedl, 2000:14).*

According to *Sibanda, (AB 9, 1999:8)* a number of countries use FIDIC and other documents biased towards large-scale or international contractors. Most small-scale contractors have neither skilled staff to interpret these documents nor the resources to procure the services of consultants. It is important to simplify documents for small contractors. This can be best achieved by using a recognized contract as a basis for developing a simplified one. The Ministry of Roads and Public Works in Kenya and Roads 2000 project supported by DANIDA and SIDA developed a draft contract document based on similar documents used in Uganda and Tanzania. The contract document is only 35 pages, but contains all the elements of a contract document such as obligations on the part of the contractor and the employer, specifications and a bill of quantities. The activities include 21 routine maintenance activities and 8 improvement activities for sections of the road that require improvement. The main concept of the document is that each month the contractor is instructed on what works to do, the following month the completed works are measured, payments prepared and new instructions given *(Goss, AB 13, 2002:7).*

In Lesotho, the new procurement document supported the growth of emerging contractors, thus contributing towards the government objective of gradually building its local construction sector and increasing its employment-creation capacity. The programme was the second highest single employment institution in Lesotho, employing over 2,500 workers and providing work for about 0.3% of the total workforce countrywide. The procurement system developed covers: *(Sahle AB 14 2002:5)*

- health and safety issues
- preferred technology – by defining employment goals and equipment type
- compliance with the necessary labour laws of the country
- practical monitoring system that helps the client verify achievements of the set goals and conditions, including the full and timely payment of wages to workers.

The procurement procedures should incorporate social clauses that ensure decent working conditions and standards. South Africa developed a Code of Good Practices for guiding planners and implementers on labour and health and safety issues which was a reflection of employment act (*ASIST Bulletin No 16, 2003).* Clause P.3 of Zambia tender documents stipulates minimum health safety requirements *(Beusch, 2004:P-6).*

Garnier and Imschoot, (1993:45-47) gives a summary of the basic conditions which any contractor should conform to:

- Selection of and recruitment of labour – consider poverty line, equal chances between men and women, minimum working age and employ local people as close as possible to area of work.
- Safety, health and first aid must be available on site.
- Other working conditions – working hours and breaks, on-site facilities and social services and that collective transportation should seldom be required.

Most important of all, these must comply with ILO conventions which are particularly relevant in the area - two conventions, no 29 on forced labour and no 105 on the abolition of forced labour; convention no 50 on recruitment of workers, convention no 94 on labour issues and Decent Work Agenda (*Stenstrom, AB 20, 2004:4).*

4.3.5.7 Identify and select actual projects for the programme

At this stage, projects are identified at the local level (see phase zero – local planning) and forwarded to project management units which are either a government department or a private institution. Using poverty profiles or accessibility profiles *(as discussed in phase zero)* communities requiring assistance are approached. The communities prioritise the projects and submit them to the relevant local authority for screening and appraisal before sourcing funding from government budget or donor community *(Johannessen, 2003:52).* For both government funded and donor funded projects, inventories are taken, drawings are done, bills of quantities are taken off and estimates are prepared for the identified projects. These are then consolidated into work packages for the tender documents.

According to *GoM / EU PWP Malawi Final Report (2005:6)* identified needs were submitted to the District Assemblies through Local Development Institutions. The District Assemblies prioritise the project proposals at the District Development meetings. The District Assemblies forward the prioritised list of roads to National Roads Authority for possible funding.

Based on the list provided by NRA, GoM/EU PWP District Engineers in conjunction with District Assembly technical staff visited the prioritised roads and bridges and carry out detailed inventories and then prepare schedule of quantities, prepare drawings, prepare technical specifications and compile tender dossiers.

Implementation of bridge works was mostly sub-contracted to local Civil Engineering Consultants who were responsible for taking inventories, design, preparation of drawings, bill of quantities, technical specifications and compilation of tender documents.

4.3.5.8 Procure work package suppliers

Using the tender documents / dossiers prepared above, work package suppliers are procured. To catch a wider market, there have been two stage procurement systems for labour based contracts. These are pre-qualification (short listing) and open tendering.

According to *Garnier and Imschoot (1993:33)* in Haiti, the procuring of contractors for work packages was a two stage process. There had been pre-qualification before tendering.
"In connection with the preparation of the "Triennial Main Road Network Rehabilitation and Maintenance Programme," the Ministry of Public Works, Transport and Communications hereby invites small and medium sized local construction enterprises to be pre-qualified for tendering."

Similarly in Ghana there has been a two stage process of pre-qualification and competitive tendering. *(Airey, AB 20, 2006:6)*
"So after awareness raising, contractor meetings and training in competitive bidding, 13 lots of road improvement works were advertised in Nanumba District for competitive tender by some 26 pre-qualified labour-based contractors (LBCs) in late 2000."

4.3.5.8.1 Pre-Qualification

Pre-qualification and bid evaluation procedures involve different types of criterion to evaluate the overall suitability of contractors such as: General, technical, managerial, and financial criteria *(Hunt, 1966);* Financial stability, managerial capability and organizational strength, technical expertise and experience of comparable construction *(Merna and Smith, 1990);* Relevance of experience, size of firm, and safety record *(Moselhi and Martinelli, 1990).* In Malawi, GoM / EU – Income generating Public works Programme (IGPWP) project no 9.ACP.MAI.17 identified three main criteria – general information, financial information and technical information (key personnel experience, construction plan and firm's experience in relevant works) for contractor pre-qualification and bid evaluation along with the information necessary to assess these criteria.

Both in Malawi and in Haiti the procedure had been to firstly invite eligible contractors to apply to be short listed to tender for the works which are defined by the client. The selection of enterprises takes into account, the size, cost and technicality of the project. The contractors are screened based on the capacity and means of the enterprise in financial terms, its experience in similar work, the qualifications of its staff and the available equipment. It is of paramount importance to note that in these documents, it is clearly specified that labour based methods of construction are to be used for the execution of works.

Garnier and Imschoot (1993:12) suggest the following reasons for conducting pre-qualification before tendering.

- To avoid the participation of small entrepreneurs who have neither the required turnover nor any change of their tender being accepted. Their participation is not advisable given the costs they will incur in preparing their tenders
- To limit the number of tenders to those enterprises which have the required capacity. The evaluation of the remaining tenders can thus be carried out more thoroughly.
- To weed out as quickly as possible the entrepreneurs who clearly lack the minimum qualifications for bidding.

4.3.5.8.2 Tendering (Competitive bidding)

According to *GoM / EU PWP Malawi Final Report (2005:6-7)*, roads and bridges tenders were advertised in the local daily newspapers inviting small-scale local civil engineering contractors who were registered by the National Construction Industry Council (NCIC), mostly those registered under MK5.0million (US$36,000.00) category. The tender dossiers were obtained after payment of a reasonable fee to cover production cost of the document. Submitted tenders were opened in public with tender evaluation carried out thereafter based on the administrative, technical and financial capacity. Successful tenderers were awarded contracts and the list was always publicized in the local daily newspapers as a press release. The approach followed is depicted in the Figure 4-15 below.

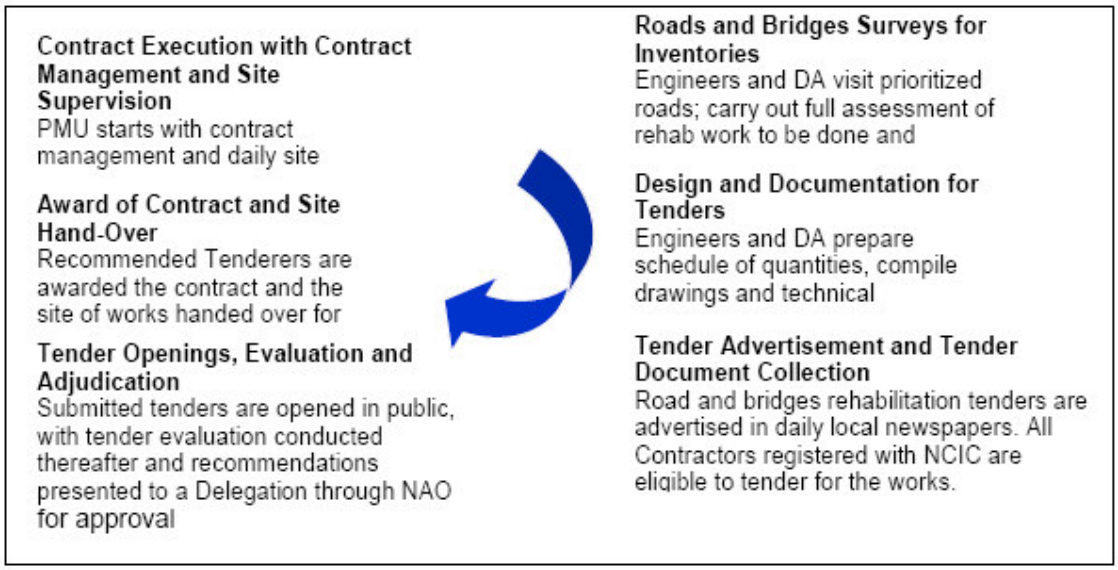
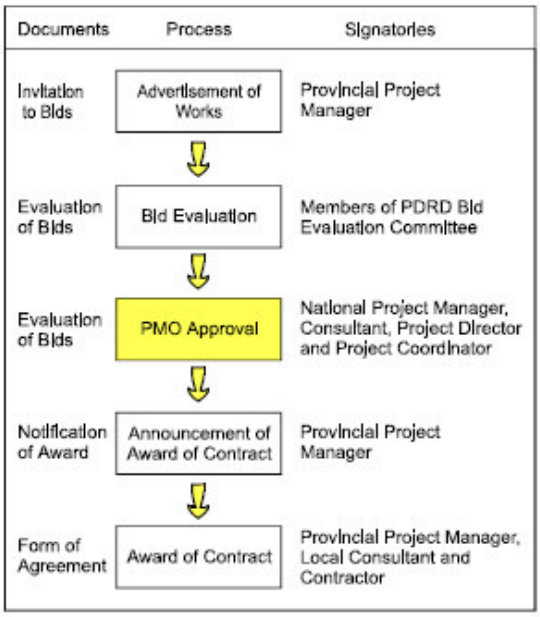


Figure 4-15: Bidding Process for GoM / EU PWP(2005) in Malawi

In Kingdom of Cambodia, all road works contracts follow a set of procedures which clearly defines the role and responsibilities of the Project Implementation Units as well as the Project Management Office. For civil works contracts with a total value greater than US$ 50,000:-, it is necessary to announce works, following the procedures for local competitive bidding. In essence, this implies (i) that an official bid announcement needs to be carried out and (ii) that any qualified bidders may participate in the bidding process. This involves advertising the works in local newspapers as opposed to domestic canvassing where only a limited number of firms are invited to submit bids. For LCB, it is also necessary to invite a representative from Ministry of Economy and Finance (MoEF) to participate in the bid evaluation. If the contract value exceeds US$ 500,000.-, bids will need to be advertised using Asian Development Bank's (ADB) procedures for International Shopping or Competitive Bidding. It is expected that all labour based road works contracts will be limited to amounts where either domestic canvassing or local competitive bidding will be the appropriate procedure.

Both these announcement procedures require the same type of bidding documents and follow the same procedures for bid evaluation and award of contract. Although it is not required to advertise bids for contracts with a value less than US$ 50,000:-, it may prove a useful method of attracting more contractors to work with the Project.



Contracts for labour-based road works are prepared by the PIUs, including announcement of bids, bid opening, bid evaluation, award of contract, inspection and supervision of works, certification and payment of works and finally issue of final completion certificates.

The Project Management Office is responsible for the approval of the budget of each of the road projects, approving the Engineer's Estimate and final approval of the findings of the bid evaluation carried out by the PIUs.

The bidding process is regulated by the Project Administration Manual, issued by the Ministry of Economy and Finance. Depending on the size of the contracts to be issued, MoEF prescribes different methods for the bidding process:

Source: Johannessen, 1999:4

Figure 4-16: The Bidding Process in Cambodia (1999)

Bid evaluation is carried out immediately after the bid opening. The bid evaluation is an internal management meeting in which all discussions are confidential. This implies that only the members of the Project Implementation Unit (PIU) bid evaluation committee are present during this exercise and their final selection of most successful bidders should not be announced before a final approval of the evaluation has been obtained from the Project Management Officer (PMO).

After final approval by PMO of the findings of the bid evaluation, the contract is awarded by the (PIU) to the most successful bidder. The PIU should notify the Contractor immediately after obtaining PMO approval of the evaluation, thereby allowing the Contractor to mobilize as soon as possible *(Johannessen, 1999:4)*.

4.3.5.9 Summary

The review in this section was on management processes for obtaining production information for labour based works. The current practices indicate that the objectives of Phase Four of the Process Protocol for labour based works include:

- To experiment with the use of labour based technology
- Assess availability of labour
- Establish methods of construction
- Assess acceptability of the technology
- To experiment and decide on payment of wages in kind or cash
- Conduct socio-economic assessments

The Goals of phase four include:

- Finalize all major deliverables and proceed to the construction phase
- Gain approval to proceed through to phase 5.

At this stage, the supervising staff and contractors have been trained and have acquired necessary skills to carry out the construction works. In addition, the evaluation committee has prepared a report that is presented to either procurement committee or technical sub-committee or the project steering committee for approval. Upon approval, the contracts are awarded to successful contractors. The award of contracts then authorises the beginning of the construction phase
The next phase looks at activities that are involved in the construction phase *(phase five).*The key steps of phase four may be summarised in Table 4-28 and a process flow diagram (Figure 4-17).

Table 4-28: Phase four processes and deliverables

Processes	Deliverables	Country Experience
Recruit and Orient Project Team	Organogramme (updated)	Malawi Royal Kingdom of Cambodia
Launch the Project		Malawi Tanzania
Build Contracting Capacity (Piloting) ▪ Establish Training Institution ▪ Assess Training Needs ▪ Identify and Select Trainees ▪ Develop Training Materials ▪ Conduct Training	▪ Standard of construction ▪ Labour Supply ▪ Wage Rate (revised) ▪ Task Rate (revised) ▪ Training Institution ▪ Community Mobilization Methods ▪ Labour Recruitment Methods ▪ Training Manuals ▪ Trained Supervisors ▪ Project Selection Criteria ▪ Registered Contractors	Ghana Malawi Tanzania
Review and Modify Contracts Documents	▪ Contracts Documents ▪ Health & Safety Plans (final)	Malawi Zambia Kenya
Conduct Baseline Survey	▪ MIS ▪ Baseline indicators	Malawi Lao PDR
Identify and Select Projects	▪ List of Projects ▪ Cost Plan (final) ▪ Gantt Chart (final) ▪ Technical Designs (final)	Malawi Ghana
Procure Work Package Suppliers ▪ Pre-qualification ▪ Competitive Bidding	▪ Shortlist of Contractors ▪ Qualified Contractors ▪ Procurement Plan (revised)	Haiti Malawi
Revise Project Concept	Project Concept (final)	Updated using the deliverables in the above processes.
Revise Project Brief	Project Brief (final)	
Revise Execution Plan	Execution Plan (final)	

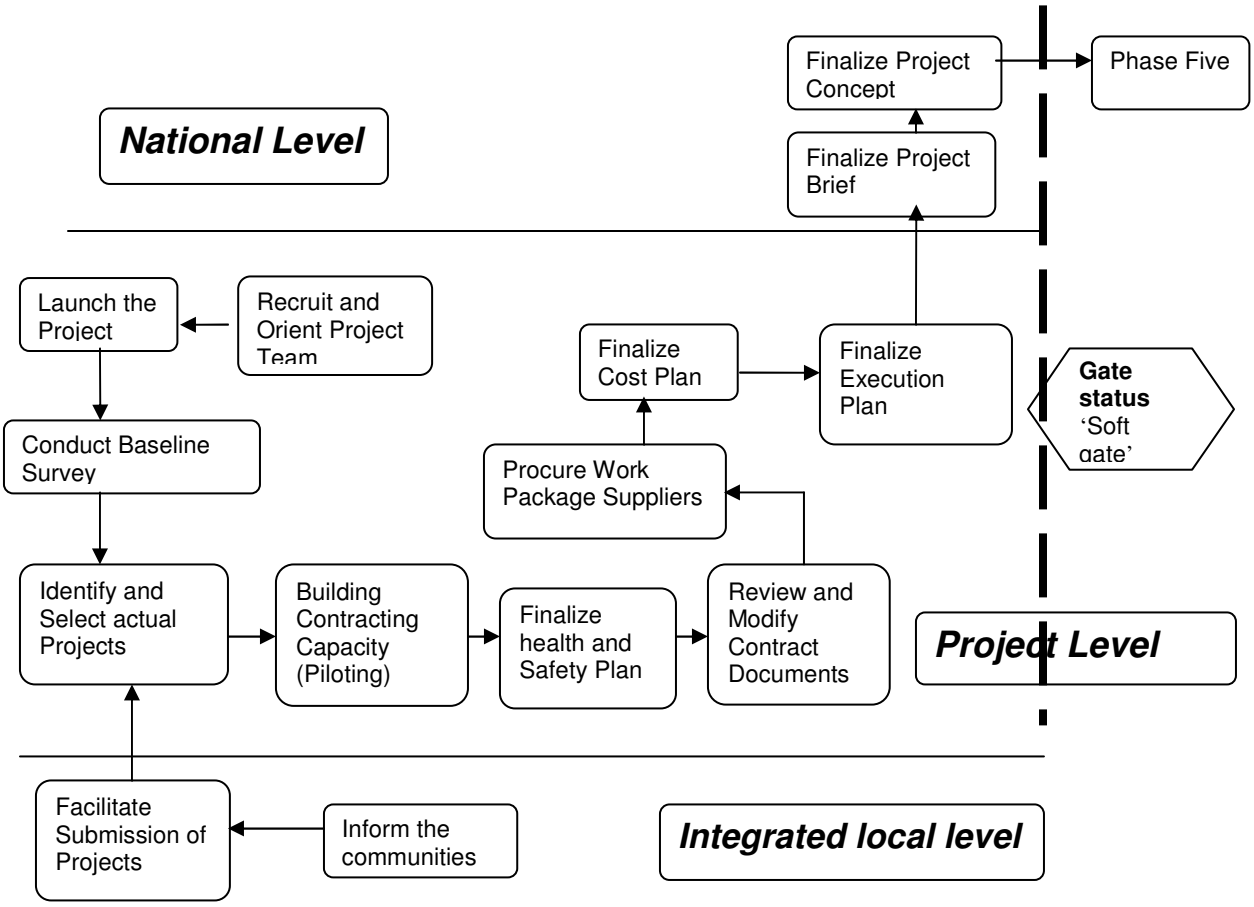


Figure 4-17: Phase four process flow diagram

4.3.6 Phase Five - Construction

4.3.6.1 Introduction

Failure to implement the policies and required actions contained in the work plans of projects is widely recognized to be one, if not the major, weakness of contemporary planning in the third world countries *(Waterston, 1965; Faber and Seers, 1972, Iglesias, 1976).* If a plan or project does not result in change necessary to achieve desired goals and objectives then it is, in effect, meaningless. Goals and objectives have to be translated into action and it is implementation which provides the crucial mechanism that permits this progression from plan to action and to change in those dimensions of the economic, social and physical actions that are the object of planning activity *(Conyers and Hills, 1992: 154).*From the Process Protocol (chapter 2), construction is phase eight. For labour based works, this is phase five. Implementation or construction is therefore crucial to putting to test the work plans *(phase three)* and production information *(phase four).*

In this section, the nature of construction / implementation processes of labour based works is examined focusing in particular on the analytical and managerial techniques available for this purpose. The management processes of the construction phase are described. The activities to be explained in this phase include monitor procurement, develop operational project model and implement handover plan. Then data to be collected and methods of collection of such data for monitoring procurement and progress; and control of cost and time are described. Finally the last processes to be reviewed also are manage and undertake construction activities; manage on-site resources and labour; and health and safety as shown on the Process Protocol (Appendix 1)

4.3.6.2 Authorize work to be done

When work is about to be done, it is allocated to the team, often via work –to-lists. Work-to-list is a list of activities to which a person is assigned or a resource is assigned to work. The person or resource is given activity schedules for all work packages on which they are working (see responsibility chart – Appendix3 – Annex 1). A period of time within which the assigned work is to be accomplished is also given. The period is typically the current period and one or two control periods into future. The work-to-lists contains *(Turner, 1999:303)*

- All activities started but not finished.
- All activities due to start in the period

Procedure 6: work authorization procedure of the PMU design and management system of *GoM / EU PWP* (2005) details the method for the actual awarding of the contracts to the successful tenderer recommended during evaluation. The Contracts Manager provided approved list of successful tenderers for every contract to be awarded. Then letters of award are drafted by District Engineer and got approved and signed by Contracts Manager. Tenderer/contractor signed form of agreement in original tender/project documents which were sent to Contracts Manager for countersigning by PMU and National Roads Authority. Upon having all documents approved and signed, the district engineer handed over the site to contractor to proceed with construction activities.

4.3.6.3 Sensitisation meetings with communities

Community involvement in poverty projects has been recognized in Africa and other regions as an important factor in achieving sustainable development at local level. Accordingly, there is great interest in moving from the blueprint style of planning and management and toward a more participatory approach in which beneficiaries and programme management share resources and knowledge while building the institutional capacity that allows the poor to analyse their needs, initiate their own efforts and stress their demands *(Holt, 1991; Korten, 1980; O'Sullivan, 1993)*

In Botswana, the community consultations involved a sociologist who conducted numerous Kgotla meetings at communities adjacent to the project roads. The consultation informed the communities of the project and sought their participation. It also provided key socio – demographic and gender data useful in the project design and advice to contractors on recruitment. The population and availability of workers along the project roads were also assessed *(Obika, Masimega, Segokgo and Overby, Paper 109)*

The Western Uganda Road Maintenance Capacity Building Project which was jointly funded by the British and Ugandan governments supported the Ministry of Works, Housing and Communications (MoWHC) in the rehabilitation and routine maintenance of selected gravel

trunk roads in western Uganda. Unusually for a trunk road project, it had quite a substantial community participation component. Whilst the project did not expect local communities to freely provide labour or materials, it had developed approaches to involve local communities as important stakeholders in the trunk road network.

The main mechanism had been to establish road committees at sub-county level composed of the local leaders of villages and parishes along the road plus women, youth and other sub-county representatives. The MoWHC and project staff conducted one-day workshops with the committees to inform and sensitise them about the impending rehabilitation contracts and issues related to road maintenance such as the importance of drainage, road reserves, access to borrow pits, road safety etc. Site visits hosted by the MoWHC were then conducted along the roads with representatives from the road committees and the contractor, both at the start of the contract and during the defect liability period following completion of the works. These had provided a very useful opportunity to identify problems, make minor amendments to the works to improve the design or to address local needs (such as including a parking bay for a local roadside market), made the contractor's work easier by establishing good local relations, and had the MoWHC seen to be more responsive and accountable to local residents who are government taxpayers *(Leyland, AB 10, 2000:3*).

4.3.6.4 Recruitment of labour

The actual employment of management of labour force is done by the contractor according to procedures set out in the contract documents. Clause 2.6 of the proposed bid documents by *Garnier and Imschoot, (1993:72&73)* the contractor is instructed to abide by labour regulation of the country, to recruit local unskilled labourers and artisan; to keep a record of the people employed, time worked and wages paid to employees. In Cambodia clause 10 of bid documents on Recruitment of Workers stated that as far as reasonably possible, the Contractor shall recruit his un-skilled labour force from areas adjacent to the Works and in any case within reasonably walking distance of the site. The Contractor shall recruit new labour from time to time as the work progresses and he shall agree the recruitment systems and procedures with the Provincial

Labour Inspectorate for compliance with the regulations in force at the time *(Johannessen, 1999).*

In Ghana, recruitment of casual workers was done in a structured manner using existing local community channels. Contractors usually went through the local chief, who informed the community about the requirements and nature of work to be done. The information included amount of remuneration and approximate duration of the work period. The word was spread around the community such that, when the contractors came to the area, they could begin the selection of workers. The recruitment process was non-discriminatory; a gender balance was maintained. Women were generally assigned tasks like spreading of gravel and distribution of drinking water. The minimum age for recruitment of workers was 18 years *(Chite, AB 9, 1999:13).*

4.3.6.5 Monitor procurement

Procurement is a tool through which a client acquires services from a service provider. Procurement documents define the roles and responsibilities of both parties, i.e. client and service provider, during the delivery process. If properly planned and executed, procurement could be used to address and meet long-term development goals and contribute towards poverty reduction. Governments, faced with the challenge of tackling poverty, acknowledge that providing decent employment will assist in the fight against poverty and lead to sustainable development.

Development programmes should have interest in having a procurement system that will:

- provide decent work to the unemployed with the relevant applicable labour standards incorporated
- offer technology choice and support skills transfer
- encourage and support the participation of small local entrepreneurs and technical service providers in the construction industry
- assist in addressing key social issues identified by the client, such as unemployment, empowerment, HIV/AIDS.

- have potential for countrywide acceptability for both major and minor work with as little modification as possible.

Pro-development procurement systems should balance between the different bid assessment parameters including price, competence, and meeting set development and social goals. The whole procurement process, including adjudication and project management processes, must be transparent and able to verify the achievement of the set goals. Innovative monitoring tools that are not limited only to cost and progress, as is currently the case, have to be in place. The monitoring tools should have a mechanism through which the level of achievement of the set development and social goals can be verified *(Sahle, AB 14, 2002: 1&4)*

Project monitoring, to take a particular focus, is fundamentally concerned with measuring quantities relating to resources expended and to time in particular *(Conyers and Hill, 1992:170).* With regards to labour based works, the following monitoring indicators on procurements have been tracked to verify the level of achievement of the set development and social goals.

- *Community and beneficiary targeting*

  The estimated total rural population in the nine districts where the GoM / EU Public Works Programme was operational is 3,625,869, consisting of about 788,850 households according to statistics obtained from National Statistic Office. The average number of villages found along a typical 10 km section of district rural road is approximately 9. An average village consist of about 50 households. According to 1998 National Statistical figures a household consists of an average of 5.5 family members. This means that about 450 households with about 2,475 people benefited directly and indirectly from a 10 km road rehabilitation contract implemented. Therefore, about 111,645 households with about 614,048 people directly and indirectly benefited from 2,481 km of road length rehabilitated during the programme. This thus calculates that every 1 in 7 households or 14 % of the total estimated 788,850 households in the nine districts were directly and indirectly benefited in income generation through temporary employment from or supplies of local materials to road works contracts. This represents 198% achievement of the targeted households of 1 in 14 (56,346 households). The food shortage experienced in

2001/2002 and 2004/2005 contributed to the high figures on number of household involved in the implementation of the road projects *(GoM / EU PWP, Malawi – Final Report, 2005).*

- *Employment Opportunities Created*

  During implementation of GoM / EU Public Works Programme in Malawi, figures from contractors pay sheets indicated that 27,043 individuals were directly employed of which 25,773 individuals were employed on 226 road rehabilitation works contracts and 1,270 individuals on 52 bridge works contracts. A total of MK 103,356,200 was paid out as wages to rural needy people. MK 98 989 200 of the total was paid out from road works contracts and MK 4,572,000 from bridge works contracts. A total 1,622,580 person-days (1,546,380 person- days from road works contracts and 76,200 person-days from bridge works contracts) were created from road rehabilitation works contracts *(GoM / EU PWP, Malawi – Final Report, 2005).*

- *Gender equality*

  Participation of women in various areas of implementation of road component projects was one of the cross cutting issues which was monitored through the period of the programme. According to International Labour Organization the minimum requirement of female workers is 25%. The programme was given a target of 40% and this was stipulated in the *tendering and contract documents.* By the end of the programme, road rehabilitation contracts recorded an average of 39% women representation and 26% was recorded on bridge contracts, which are both above the required minimum of 25%. Women representation on bridge works contracts was lower because of the nature of the works that required heavier work and skills of carpenters and builders rather than the unskilled nature of road works. Under rehabilitation contracts the representation of women was very close to the stipulated target of 40% *(GoM / EU PWP, Malawi – Final Report, 2005).*

- *Cash benefits to the communities*

  The wages paid by contractors to their employed work force with the execution of the 226 road rehabilitation and 52 bridge work contracts amounted to MK 103,561,200. This reflects that on average a person engaged on one of the 278 contracts earned approximately MK 3,830 per contract. This is further substantiated by the total wages paid of 103.5 million Malawi Kwacha divided by the total of 1,622,580 man-days, which equals about MK 64 per person *(GoM / EU PWP, Malawi – Final Report, 2005).*

- *Use of appropriate technology*

  Under the project, in the Northern Central area of Namibia, three district roads with a total length of 40 km were rebuilt as gravel roads and one existing 22-km-long gravel road was rehabilitated and sealed with a bitumen layer. The construction works were conducted labour intensively, i.e. chiefly manually with a reduced machine input. This created employment for people in the region to the tune of approx. 12,000 worker-months. Overall, these workers earned income amounting to some EUR 1.4 million *(Bicon, 2002:1).* In Kenya, the Rural Access Roads Programme (RARP) dramatically increased the knowledge of labour intensive construction and valuable lessons were learnt *(World Bank, 1986).* The Rural Access Roads Programme (RARP) was first major construction programme in Africa, was the largest and longest running programme which has been extensively documented *(McCutcheon, 1990 and de Veen 1983).*

- *Skills transfer and use of small scale contractors*

  In Ghana, in a period of 10 years since the inception of the labour base works project in 1986 up to 1996, 93 contractors were trained. In addition, 542 management and supervisory staff from the 93 contracting firms and Department of Feeder Roads (DFR) were trained in the application of labour intensive technology *(Ashong, 1996).*

4.3.6.6 Progress review meetings

Regular progress meetings are essential part of control process. Progress meetings give an opportunity to:

- maintain team cohesion
- inform the team of information and decisions which have been received from stakeholders.
- review the risks and issue logs
- reinforce the importance of the entire team sharing the responsibility of meeting the project's objectives.

Team members are asked to give an active task report to the meeting to highlight any tasks that should have been completed but have not been, with reasons and forecast completion dates *(Young, 2003:220).*

For GoM / EU PWP, there were three types of meetings – Programme Steering Committee (PSC) Meetings, Stakeholder Consultative Meetings and Progress Meetings with the contractors to review project issues and to track down project activities. The Programme Steering Committee (PSC) Meetings were twice a year and for its Technical Sub-committee was as regularly as required. Stakeholder Consultative Meetings were being held on quarterly basis and there were monthly (whenever a need arises) meetings for the contractor.

- ***Programme Steering Committee (PSC) Meetings***

  According to Programme Steering Committee Meeting No 1 held on November 11, 2005 at Cresta Hotel in Malawi for Income Generating Public Works Programme (IGPWP), the agenda was to consider the proposed composition and terms of reference for the PSC, the overview of IGPWP in terms of objectives and purpose, expected results, implementation arrangements, financial resources, achievements and specific activities of the programme management unit (PMU). Issues of selection criteria of district of operation, re-allocation of resources between components and implementation of short impact intervention to address the looming food shortages were ratified by PSC.

Minute PSC / 1 / 1 informed the meeting that the objective of the PSC is to provide policy direction to IGPWP and to follow-up progress in the implementation of the programme. During the meeting which was held on august 26, 2006, the agenda included ratification of decisions of the Technical sub-committee.

The members present were European Union (Sponsor), National Authorizing Office, Ministry of Local government and Rural Development and other line ministry with links to IGPWP – Agriculture, Forestry, Irrigation and Water Development, National Roads Authority, Africon and IGPWP.

- ***Stakeholder Consultative Meetings***

  The Report on the 2009 IGPWP Implementation Review Work held on 12 – 13 October 2009 observed that the objective of the stakeholder review workshops were to receive reports on implementation progress from the district assemblies; review progress in the implementation of planned activities; share experiences and discuss merging issues and find solutions to existing challenges and constraints. It was also an opportunity to assess the readiness of the assemblies for the full assumption of the responsibility for the implementation of IGPWP roads maintenance activities.

  The expected output of the workshop was improved collaboration with district assemblies and stakeholders for the successful implementation of interventions and ensuring a smooth transition in the phased take-over of responsibilities for IGPWP interventions by district assemblies. The collaboration and smooth transition were grounded in measures agreed to address capacity issues discussed and by participants putting forward contributions on how the interventions can be sustained after the close of the programme.

  These review meetings were being attended by Chief Executive Officer for the district, District engineers, district planning officers, community development officers, District health officers, district forestry officers, district finance officers, IGPWP, Malawi Social action fund, National Aids Commission, National Roads Authority, District agricultural officers.

- ***Progress Meetings with the contractors***

  Meetings between the Client - the Engineer and the Contractor were required to provide a forum for discussing progress, discuss problems and key issues affecting the Contract to decide on what actions should be taken. Because payments to the Contractor had normally been made on a monthly basis it had been accepted practice that Progress Meetings were held monthly. Progress Meetings were minuted and were attended by representatives from all sides contracting authority – contracts engineer and road supervisor; District Assembly – District Engineer and Road Supervisor and the contractor – company director, site agent and foreman.

  Site Management System (SMS) for *IGPWP* had a fixed agenda to be followed during the meetings to focus attention on events or actions that have, or have not, occurred against the item since the last meeting. A typical agenda was based on the following main item headings:

Table 4-29: Agenda for meeting with a contractor

▪ Approval of Minutes of last meeting ▪ Matters arising ▪ Contract documentation – performance guarantee and insurance ▪ Financial Matters ▪ Construction programme ▪ Progress to date (List of main activities) ▪ Accommodation of traffic ▪ Technical Matters ▪ Local workforce – recruitment, payment of wages ▪ Measurement and payment – payment certificate, measurement of quantities, variation of works	▪ Site administrative matters- working hours, site security, site safety and establishment ▪ Landowners, general public and local authorities ▪ Disruptions, delays and frustrations ▪ Claims and disputes ▪ Future progress ▪ Contractor's resources: Staff, Equipment, Materials ▪ Miscellaneous ▪ Date of next meeting

4.3.6.7 Progress reporting

To report on cost, schedules and specifications, there needs to be a single information system to collect data. A project monitoring involves determining what data to collect; how, when and who will collect the data; analysis of the data and then reporting current progress *(Gray and Larson, 2008:419).*

Table 4-12 *(*Logframe of IGPWP) stipulates that the sources of verification of the objectively verifiable indicators are Project Management Unit (PMU) status reports, contractors' employment reports, attendance register, interim and final programme evaluation reports and MC monitoring reports. To avoid spending all the time preparing reports, a process must be created to provide essential data. One way of keeping reports short is by using templates (forms) whose detail is presented at a full project review *(Young, 2003:223).*

The reporting system for IGPWP in Malawi had been quite elaborate, ranging from the road supervisor, contracts engineer at the district office (Zone) to Chief engineers and the task manager roads at the PMU. The main reporting forms for IGPWP (forms 1 to 13) are included in Appendix 5A. A summary of the type and purpose of each is shown in Table 4-30 below.

Table 4-30: Monitoring Forms Summary for IGPWP in Malawi

FORM NO	DESCRIPTION	PREPARED BY	DIRECTED TO	OBJECTIVE OF REPORTING
FMS CA 05	Communication Schedule	CE / RS		Summary of stakeholders and mode of communication
FMS CA 03	Variation Order	RS / CE	CER / TMR	Describes proposed changes and justification and authorizes the issuance of a formal change order
FMS SS3	Site Instruction	TMR / CER or CE / RS	Contractor	Describes ordered changes to be done by contractor, and authorises and orders implementation of such changes
FMS SS4	Daily site diary	Contractor	CE / RS	Document daily work progress, equipment in use, personnel on site materials, safety issues and site instructions issued
FMS SS5	Snags list form / Works Inspection Report	RS / CE		Summary of detailed work in progress

FORM NO	DESCRIPTION	PREPARED BY	DIRECTED TO	OBJECTIVE OF REPORTING
FMS SS6	Mid-month/End-month progress report	CE / RS	TMR	Summary of construction activities for mid / end of month - productivity rates, revision in quantities / duration, scheduled and actual progress in % and time lapsed
FMS SS7	Interim payment certificate	RS / CE	CER / TMR	Summary sheet of contractor's partial payment during construction.
FMS SS8	Running totals quantities form	RS / CE		Itemized work completed to date vs amount during current pay period to be included on payment certificate
FMS SS10	Mid contract budget and cash flow review	CE / RS	TMR	Summary of monthly report of project status in terms of costs
FMS SS11	Monthly site report	CE	TMR	Summary of site instruction, payment of local workforce, rejected work, overall progress and safety of public for a month
FMS SS13	Transmittal Note			Keeps track of submittals with stakeholders involved in the project
FMS CA08	Contract Accident Report	Contractor	CE / RS	Summary of how to ensure safety of the public and workers

Note
RS = Roads Supervisor
CE = Contracts Engineer
CER = Chief Engineer (Rehabilitation)
TMR = Task Manager (Roads)

Essentially, the information / data flowing in the forms / reports are the various components needed to summarize current status on costs, output e.g. km of road rehabilitated, number of people employed, problems and issues since last report, health and safety issues and any corrective action planned. Based on these reports the PMU produced monthly, quarterly and annual progress reports which served as useful reviews of productivity, costs and problem areas and were used in the overall monitoring of the programme.

In Ethiopia, for example, Government staff at the local level collects monitoring data using standardized forms. The information is then compiled and summarized at the district, regional, and federal levels where it is converted into electronic form. The system aimed for simplicity to

account for the low capacity of the frontline units of programme. (*Ninno, Subbarao and Milazzo, 2009:45).*

4.3.6.8 Controlling Cost and Schedule

The control of expenditure and time schedule is important to all organizations and therefore requires measuring and monitoring the cost and time of the project. Monitoring is the process of identifying and tracking performance indicators and reviewing implementation over the life of the programme *(Biomquist, 2003:3 and Ezamanari, 1999:1).* It can be defined as a continuing process of collecting and reviewing data performance indicators in order to inform managers (and other stakeholders) about progress and achievement of objectives of the programme (*Biomquist, 2003:3).*

On the other hand control is the process of comparing actual performance against plan to identify deviations, evaluate alternative courses of actions and take appropriate corrective action. *Gray and Larson, (2008:421)* noted the following project control steps for measuring and evaluating project performance.

- Setting of baseline plan
- Measuring progress and performance (monitoring)
- Comparing plan against actual
- Taking action

Appendix 3 (work plans) shows baseline plan on budgets and time schedules which were set for GoM / EU PWP that has elements for measuring performance. The IGPWP forms (Appendix 5A) are then used to measure progress and performance indicators to be included in progress reports. The graph in Appendix 5B compares expenditure and budget and Appendix 5C, shows achieved km to date compared to programmed (planned) km to date as per *GoM / EU PWP biannual report no 4 (July 2004 to December 2004).* Page 2 of this report explains that spending remained lower than originally planned mainly due to liquidity problems. The delay in replenishment had a significant effect on expenditure as some activities were stalled in anticipation of receiving cash to pay for already completed activities. The planned action of

having accelerated expenditure for the month of November 2004 did not materialize though it was compensated for by December expenditure of 123% of the originally planned monthly budget.

4.3.6.9 Manage health and safety issues

A decent working environment motivates workers, leading to increased productivity. Workers should be remunerated as set in the national legislation, in full and on time. Health and safety issues should also be given special consideration, including equipping workers with the appropriate protective gear, ensuring the availability of first-aid kits on site and defining special work methods to avoid accidents. These conditions are stipulated in procurement documents. The procurement document developed by the Lesotho programme clearly stipulates that health and safety issues have priority and that the contractor is obliged to meet the set safety standards. The client's contract management team monitors adherence to these standards *(Sahle AB 14 2002:4).*Zambia and Cambodia have tender documents with health and safety issues as a priority *(Beusch, 2004).* In addition to the clauses in tender documents Malawi's Income Generating Public Works Programme has a monitoring form on health and safety issues (*refer appendix 5A – Form CC 08).* The data collected on health and safety is discussed during meetings *(see section 4.3.6.6)* as an agenda. This is also reported in the monthly site report *(Appendix 5A – Form SS 11).*

According to *Bentall, Beusch, and de Veen, (1999:197)*, a study of the "Labour based rural infrastructure rehabilitation project" in Cambodia, the application of relevant labour standards was incorporated into counterpart staff training and could be observed in the project's daily activities. The dissemination of these new practices was by, among other things, visual aids such as posters on the themes of child labour, forced labour and equal opportunities to men and women. These were translated into Khmer and distributed to local commune offices. Another method was the development of special training modules (appropriate to local conditions) to help project staff in getting the message across to rural leaders and workers, starting from the recruitment stage throughout until the completion of the works.

4.3.6.10 Manage general operational issues

An issue is any event or series of related events (that may previously have been identified as a risk) that have become an active problem causing a threat to the integrity of a project and / or related projects *(Young 2006:199).* Managing issues is similar to managing the original risk, requiring keeping records of all issues that occur and ensure that action planning is used promptly to resolve the issues.

For IGPWP site management system – Procedure no 3 (CA – PROC – 3) and Procedure no 4 (CA- PROC – 4) (2009) in Malawi, everyone involved with the project had a responsibility to identify an issue and react promptly. This included the contractor, roads supervisor and contracts engineers. The issues were in two forms: claims and variation orders.

- ***Claims***

  Any issue identified by the contractor was treated as a contractual claim and had to be recorded in the site diary (FMS SS4 – Appendix 5A). A formal written notification of the identified issue was sent to the contracting authority for determination of costs and effect on time. If the claim had justified reasons, the claim could be granted, implemented and payment certified. Otherwise it could go into a dispute resolution so that an amicable agreement could be reached

- ***Variation orders***

  When additional works, design change, specification change and omitted work had been identified the contracting authority could initiate a variation order (FMS CA 03 – Appendix 5A). Upon determination of the costs and effect on time, a site instruction (FMS SS – Appendix 5A) was processed and sent to the contractor for implementation with the approval of the programme manager.

4.3.6.11 Implement maintenance system

In this context, labour based techniques offer a range of possibilities for cheaper, more effective road maintenance. The following options for instituting maintenance systems before handover to either the communities or the local authorities *(de Veen, AB 1, 1993).*

- the classic approach of employing a permanent workforce supported by equipment

- individual or collective responsibility for the maintenance of a section of road;
- agreements between governments and communities
- use of petty contractors for routine maintenance tasks
- use of small-scale private contractors

(a) The classic approach

Attempts to modify the classic approach have focused on improving the accountability of managers and maintenance staff and on increasing the productivity of both the permanent labour force and maintenance equipment. Both have proved extremely difficult.
To reduce transport and accommodation costs, some countries have attempted to decentralize their road maintenance labour force, others have reduced the permanent workforce, with all the attendant costs, personnel problems and legal complications.

(b) Individual or collective agreements

"Length men" (locally recruited workers responsible for the maintenance of a given section or length of road) are not of course new. However, they have only recently been recognized as a major element in a routine maintenance strategy. A system relying on individual maintenance workers on rolling contracts can be effective because it reduces costs and ensures continuous attention to the road. Problems relate to the need for regular and timely payments, supervision and the natural tendency of maintenance workers to tackle only the easier, but perhaps the least necessary tasks.

The Kenyan Rural Access Roads programme and Minor Roads Programme have a total of sixteen years experience with the length men system. The system is currently used on a network of over 10 000 kilometres of gravel roads throughout the country. The approach used in Kenya focused on the training of maintenance headmen by the overseers. To reduce the workload of the overseer, the number of length men under his responsibility (about 100-150) were cut down or grouped into the maintenance workers together in gangs. *(Taylor, AB 1, 1993)*

In Lesotho using Force account operations, a length person is appointed to maintain 1 to 2 km of road, depending on the terrain. He/she is supervised by the Regional Engineer's supervisor, who visits the site on a weekly basis, if mobility allows. The planning and allocation of works is done as the supervisor travels on the road. The length person is a full time employee and paid on a monthly basis. The cost of this is about US$ 1,450 per km, of which labour costs include US$ 800 per km (based on an average of 1.5 km per worker and including supervision and overheads) *(ASIST Bulletin No 5, 1996).*

(c) Agreement between government and communities

Possibilities of agreements do exist. However, some form of motivation for the communities is necessary, whether financial or other. The idea that villagers will maintain extensive lengths of road on a self-help basis is not borne out in practice, and in any case constitutes an abuse of the villagers. As with any self-help project, questions of who benefits and what exactly constitutes self-help are critical.

Based on field experience in Eastern Indonesia and a number of other countries examples from Nepal, Ghana, Tanzania and Lesotho present interesting experience, confirming and complementing observations that through the provision of minimum training and technical support to communities' traditional self-help efforts in building village roads and motorized tracks can be utilized.

Some principal conclusions are that if self-help initiatives are to be successful, road access has to be a priority need for the village concerned; that communities are able and willing to provide self-help labour; that there are established self-help traditions; that there is a high degree of social homogeneity and support from local leaders; and finally that there are technically and socially feasible opportunities for road projects *(Winkelmann, AB 08, 1999:12).*

(d) Use of petty contractors

Petty contractors usually consist of one man firm, sometimes assisted by a limited amount of tools and unskilled workers. They may be labour contractors, usually consisting of a local businessman sub-contracted to carry out specific work, relying mainly on unskilled casual labour *(Johannessen, 2000:19).*

In various projects with ILO involvement, petty contractors are used to carry out construction and maintenance activities by petty contracts if simple contract award, monitoring and payment procedures are adopted. Such petty contracts can be handled in a decentralized way with a minimum of administration. Small-scale village-based petty contractors with minimal previous experience quickly assimilate the necessary skills to organize and manage a number of workers. Simple contract documentation could take the form of a routine maintenance contract, or a contract related to the provision of labour for a certain period at a set rate.

During project formulation, a major concern was the future maintenance of the created assets. Cambodia, as many other developing countries, has a rather lacklustre track record when it comes to maintaining its road network. For this reason, the project developed a full maintenance management system at an early stage, which was installed immediately after the first roads had been completed. As a result, the Ministry Rural Development can now boast that it has the best maintenance programme in the country. Petty contractors, recruited in the vicinity of the roads, carry out the regular maintenance work required to keep roads open through terrain that floods annually *(Tusanasorn and Johannessen, AB 14, 2002:10).*

(e) Use of small-scale private contractors

Small scale contractors are normally registered companies or tradesmen with some limited technical and managerial skills. These are local builders possessing some basic equipment and hand tools. Using small-scale private sector contractors, for example, for road maintenance clearly reduces administrative and bureaucratic procedures and there is improved efficiency (compared with works carried out directly by the government).

Small scale private contractors are being used in Lesotho**.** A contractor is given 30 to 40 km to maintain on an annual contract. The work is scheduled on a monthly basis by the contracts supervisor, who also monitors the progress on a fortnightly or monthly basis. The contract is based on task rates which are set by the client and the contractor, and the number of workdays per month.
Suppose a contractor maintains 40 km of road. The average number of worker days he has available per month is based on 26.6 workers (40/1.5) working 22 days, or 587 worker days/month. Payment of the contractor is done on the basis of the actual work performed. Therefore, the contracts supervisor measures the work at the end of each month. If tasks covering only 400 worker days have been completed, he/she will be paid for 400 days. On average, the overall annual cost for this is US$ 1,300/km. This is already cheaper than force account but the cost is expected to be cut even more as the productivity increases with more experienced contractors.

In Zambia for Routine maintenance the contractor is awarded an annual contract that will run throughout the year, but with a varying monthly turnover. The work is scheduled monthly, based on actual needs. The contractor employs his workers likewise. The sum of the contract is based on the engineer's estimate of the work included in the annual contract, and when the contract money is spent the contract ends.

The contract is supervised on a weekly basis, which will be changed to every two weeks after the pilot phase ends. The work is measured monthly and the contractors are paid according to performance. The pay is US$2.50 per worker, of which US$ 1.50 will be spent on labour (the minimum wage). The remaining dollars cover tools, supervision and profit. to calculate the total cost of the maintenance, costs of the client have to be added *(ASIST Bulletin no 5, 1996).*

4.3.6.12 Undertake interim and final evaluations

Evaluation is really an appraisal of a plan or project's performance which is undertaken either at periodic intervals (often at the end of phases or stages) during the implementation stage, when it may be termed on going evaluation (*Rakodi, 1980)* or evaluation during completion and handover *(Goodman and Love 1983, 215)* or after implementation when the plan or project has been operational for some time. This latter activity is often called 'ex-post evaluation' and is discussed in phase six. Evaluation is very much concerned with the quality of what actually happens on the ground. It should seek to identify the extent to which specified objectives are being achieved or have been achieved, impacts on the 'target population and any unintended consequences *(Rakodi, 1982).* The evaluation of social transfers like public works programmes involves the objective and systematic assessment of the design, implementation and results of the programme (*Blomquist, 2003: 3).*

Strong monitoring systems are therefore necessary to support credible programme evaluations and to provide feedback for improvements in productivity, effectiveness, and impact. Evaluation of public works is necessary to:

a) provide feedback during the life of the programme to help improve their effectiveness;
b) making projects accountable to the public; and
c) help inform government decisions about spending allocations.

Despite their value, effective M&E systems for public works programmes have been rare *(Ninno, Subbarao and Milazzo, 2009:44).* An important challenge is to define clearly the outcome of interest and how to measure it taking into account the influence of other factors. If the main outcome to be measured is the increase in the income of the households of the beneficiaries as a result of the wage rate (in cash and/or food) received, the analysis needs to take into account the transaction cost (transport) as well as lost opportunities to work. Another challenge is to calculate the longer term impact of the programme on poor people, such as being able to smooth consumption over the difficult periods, rebuild critical assets, finding permanent source of income, and ultimately getting out of poverty *(Ninno, Subbarao and Milazzo, 2009:54).*More and more public works programmes are currently been evaluated thoroughly, filling an existing gap. Programmes in India, Argentina, Peru, South Africa, and Yemen, among others have been evaluated in depth. The reasons for the lack of evaluations vary from the temporary nature of the

programs, to the difficulty of defining the objective of the evaluation and the difficulty of collecting data *(Ninno, Subbarao and Milazzo, 2009:48).*

- *Process evaluation (mid – term evaluations)* - The objective of process evaluation is to find out if the programme is implemented as designed and do have trigger indicators for next phase. *Pratt and Newton, (2007:18)* prepared a Mid - term evaluation report for Income Generating Public Works Programme in Malawi to measure trigger indicators of phase I into phase II of the programme. Process evaluation is conducted while a project is still being implemented in order to install corrective measures while the project is active. *Goodman and Love (1983:215)* points out that evaluation documents at this stage include: progress and status reports, contractors reports, works engineers reports, budget reports, year end reports of all projects and funding agency's project status report.

  In Madagascar, a study *(Andrianjaka, and Milazzo, 2008)* collected information on the number of workers employed; days worked, and wage rates across several projects implemented by different agencies. This analysis helped to make a comparison across projects with different objectives in terms of labour intensity. The results show that labour intensity for projects designed to address labour needs following natural disasters was around 80 percent, while those project aimed at building small infrastructures and implemented by ILO had a labour intensity of less than 40 percent. The information on local market wage rates pointed out that paid wages were higher than local wages, with the result that more people participated to the projected using a rotation system.

- *Final evaluation* – Once a project is completed a project completion report maybe required of the project manager. The final report and final evaluation report inclusive acts as a tool which can be used to measure whether project outputs are actually attainable and whether problems were incurred in resource input conversions. The project completion reports are submitted to top management of the agency, national planning agency and the funding agency for further evaluation *(Goodman and Love 1983:215).*
  In Tanzania , "*Employment Creation in Municipal Services Delivery in Eastern Africa-Improving the living condition and providing jobs for the poor"*, **(***final Report, 2006)*

notes that the programme conducted a final evaluation as one of the final activities to be done. A team of two internal consultants were engaged to conduct a final evaluation for the programme. The Evaluation was aimed at assessing the performance of the programme in the three countries of Tanzania, Kenya and Uganda with regards to its objectives in all respects including to identify lessons learned and good practices that might be applicable in other projects dealing with employment creation, and Private Public Partnership (PPP) approaches and that would facilitate replication or further extension of programme activities. The results of the evaluation were envisaged to be disseminated to stakeholders especially the Ministry of Local Governments in the three countries and the municipal and city authorities who were the main programme partners and the funding Agency, DFID.

4.3.6.13 Closing the project (implement hand over plan)

Carefully managing the closure phase is as important as any other phase of the project. Some of activities to be completed within this period is accounting for equipment and completing final reports, evaluation, meeting with stakeholders (*Young 2003:251 and Gray and Larson, 2008:477).*

4.3.6.13.1 Prepare final project report

Final project reports provide a summary of the project and often include items: the original need, the original project objective and requirements, benefits resulting from the project, a description of the project and a list of deliverables produced *(Clement and Gido, 2006:382).*
Employment Creation in Municipal Services Delivery in Eastern Africa- Improving the living condition and providing jobs for the poor, Tanzania, June 2006 – Final Report states that a final report provides a step by step implementation progress on quarterly basis, its achievements and constraints faced during the implementation. *GoM / EU PWP, Malawi – Final Report 2005* concludes that Final Report has been designed to provide a summary of the programme from its inception to the conclusion. It provides a reader that has never been exposed to the programme sufficient information to have an appreciation of the programme as it started with a broad concept and developed into a successful programme. The report begins by providing details such as the objectives and the approaches followed, it continues by providing details about the

finances, the achievements and impact and then discusses quantifiable indicators such as its relevance, efficiency, effectiveness, and unique aspects of the programme, sustainability and lessons learnt. It concludes with sections about the environment and its HIV/AIDS pilot project.

4.3.6.13.2 Project Closure Meeting

A project close – out meeting can be as important as a launch meeting, as part of the life cycle of the project team. It marks the end of the period of working together and allows showing grief, frustration or pleasure at having been a member of the project (*Turner, 1999:334).*Young (2003:256) points out that the objective of the meeting is to get agreement for PSC and / or donor to formally close the project. To achieve this objective:

- review the project results achieved
- receive feedback from everyone involved
- confirm completion of actions
- confirm and explain action plans for any outstanding issues
- present the completion certificate for approval and sign-off by the PSC and / or Donor.

Before closure of labour based works in Tanzania, Programme Advisory Committee *(PAC)* meeting took place during the last period of the project. The PAC was fully attended by the invited members who included officials from the Ministry of Local Governments of Kenya and Uganda as well as the Town Clerks of Jinja and Nanyuki in Uganda and Kenya respectively. The meeting provided a ground for discussions on the progress of the programme and technical input on future improvement on the implementation process. With Government representatives from the three countries of Tanzania, Kenya and Uganda in the PAC, the meeting enhanced the achievement of recognition and ownership of the programme at the government level. The PAC members acknowledged the programme contribution to the National Strategy for Growth and Poverty Reduction (MKUKUTA) and the wide demand shown in the three countries (*Employment Creation in Municipal Services Delivery in Eastern Africa- Improving the living condition and providing jobs for the poor, Tanzania, June 2006 – Final Report).*

4.3.6.14 Summary

In this section a wide range of issues concerning the construction phase has been discussed. The attention has been drawn to the management processes of phase five - construction of Process Protocol for labour based works. The construction phase has three objectives to meet:

- Monitor the construction progress
- Measure and evaluate the progress to ensure the desired results are achieved.
- Take actions to respond to deviations from plan.

The goals for phase five are

- Delivery of the project to meet developmental goals and poverty alleviation.
- Handover the project as planned

The project is declared closed. The last phase of operation and maintenance is now reached. The next section describes the processes that take place immediately after closure of labour based works projects. The processes and deliverables; and process flow diagram for the phase five are as Table 4-31 and Figure 4-18 respectively.

Table 4-31: Phase five processes and deliverables

Processes	Deliverables	Country Experience
Authorize Work		Malawi GoM / EU PWP
Sensitise Communities		▪ Botswana ▪ Uganda
Recruit Labour		▪ Royal Kingdom of Cambodia ▪ Ghana
Monitor Procurement	MIS (updated)	▪ Malawi – GoM / EU PWP ▪ Namibia
Progress Review Meetings		Malawi – GoM / EU PWP
Progress Reporting	Progress Reports	Malawi – GoM / EU PWP
Manage general operational issues	Risk Log (updated)	Malawi - IGPWP
Control Costs and Schedule	Cost Plan (updated) Gantt Chart (updated)	Malawi – GoM / EU PWP
Manage health and safety issues		▪ Zambia ▪ Malawi - IGPWP
Implement Maintenance Plan	Maintenance Plan (updated) Maintenance Manuals	▪ Kenya (RARP & MRP) ▪ Royal kingdom of Cambodia ▪ Lesotho ▪ Zambia
Undertake Evaluations	Evaluation Report	▪ Malawi – IGPWP ▪ Afghanistan ▪ Madagascar ▪ Tanzania
Implement Handover Plan ▪ Prepare Final Report ▪ Project Closure Meeting		▪ Malawi – GoM / EU PWP ▪ Tanzania

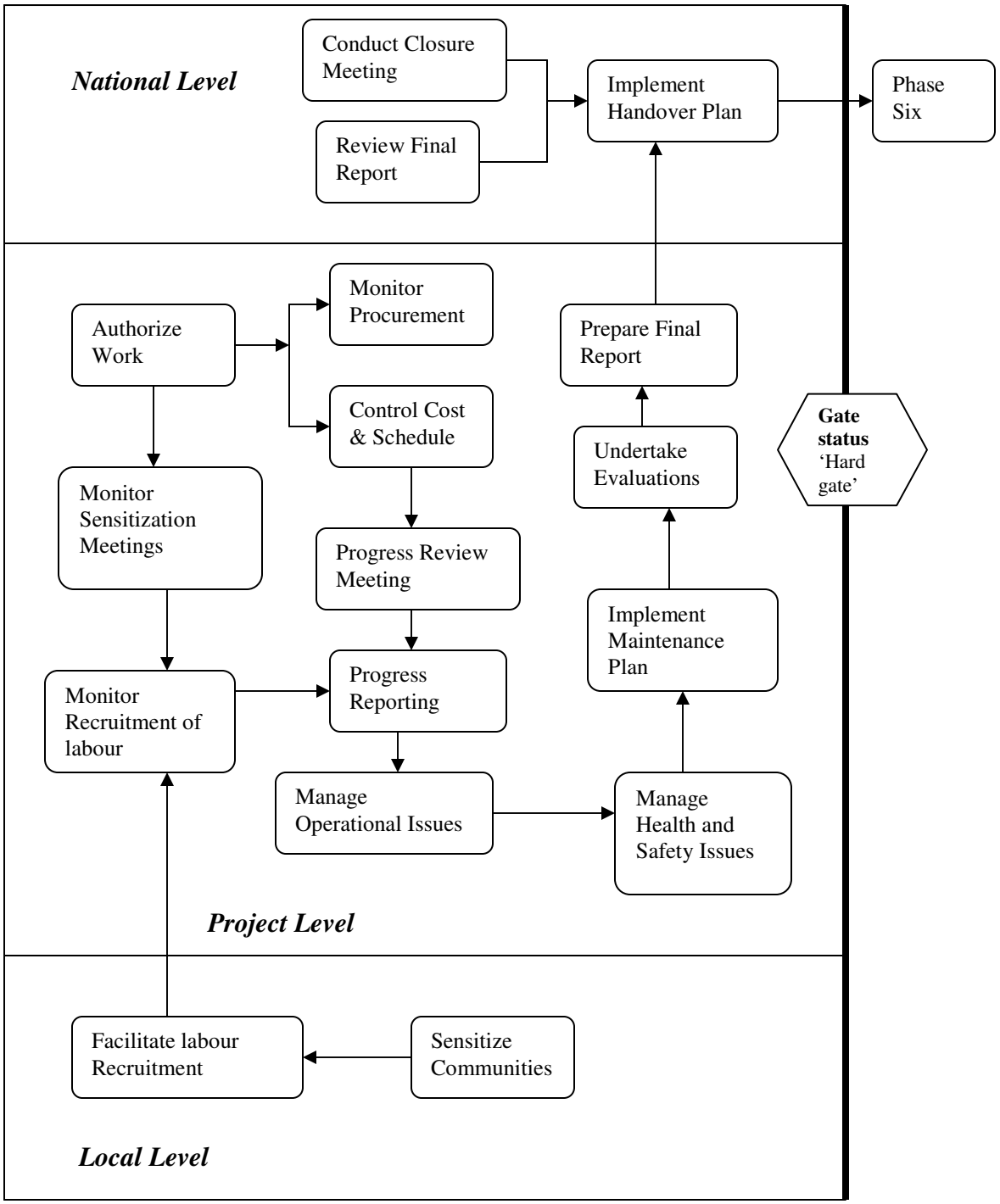


Figure 4-18: Phase five process flow diagram

4.3.7 Phase Six – Operation and Maintenance

4.3.7.1 Introduction

Project activities are brought under a unified form of management to achieve a given objective within a specified time period. Once objectives are achieved, the project must be dismantled and its remaining resources both human and physical, transferred to other organizations. Completion prepares the project phasing out and handover to the new administration; handover transfers project activity and resources to the new administration. Under phase nine of the Process Protocol (chapter 2; appendix 1), there are two activities:

- Undertake post project evaluation
- Ongoing review of facilities life cycle

4.3.7.2 Undertake post project evaluation

In labour based works, there are two types of post project evaluations

- Ex-post evaluation
- Impact assessment

4.3.7.2.1 Undertake ex-post evaluation

The post – evaluation should be conducted to measure whether the project did meet its objectives, if not, where and why it failed; such an analysis is a minimum requirement. The post – evaluation phase of the project cycle is an all important one as it links the project with the planning phase of the wheel; it links the specific with the general, the project itself with the policy that formulated it. Main components of the post – project evaluation report are: a study of the project objectives; a study of resources available and utilization for the project; an analysis of the overall project with regard to its outputs and impact; and implications for project planning *(Goodman and Love, 1983: 213 &216).* It is appropriate to carry post – project evaluation asking in depth and searching questions about each dimension as:

- Managing the project stakeholders
- Managing the project's life cycle
- Managing performance of the stakeholders and the project team

Learning points are identified and post – project evaluation report is published *(Young, 2003:262).*

The results of post evaluation of GoM / EU Public Works Programme in 2006 for roads component were that Income Generating Public Works Programme (IGPWP) should implement its activities through assemblies and that the Malawi Road Fund should provide maintenance funds to the local authorities. IGPWP should explore use of lower cost road maintenance solutions and models so that districts have a range of appropriate maintenance options to choose from. IGPWP was to adopt Public Works Programme road features such as drainage structures and soil compaction, which could lengthen the lifespan of earth feeder roads (*Pratt and Newton, 2007:18).*

In Afghanistan, a post evaluation of labour intensive works programme which was commissioned by CARE showed serious delays in completion of the project, the project proposal was too complex for the operating conditions in the country, poor targeting of poor provinces and beneficiaries, and that there were lack of capacity at all implementing levels – the NGOs, local government and the communities themselves *(Johnson, 2004)*

4.3.7.2.2 Undertake impact assessments

The evaluation of public works programmes should help to determine the impact of a programme on the intended target groups. First of all, evaluations should assess if programmes are able to raise the income of poor beneficiaries to help them to smooth their consumption and eventually reduce the level of poverty in the country. Secondary objectives such as providing skills development to unemployed or women should also be assessed in case they are explicit objectives of the programmes. Lastly, evaluations should also assess if the infrastructures and services provided by the programmes have an impact on the life of the communities *(Ninno, Subbarao and Milazzo, 2009:54).*

The impact of any intervention can be defined as "the difference between the outcome indicator with the programme and its counterfactual value for participants in the absence of the programme" *(Galasso and Ravallion 2003: 15).* Very few impact assessments of employment

programmes have been conducted that follow this rigorous approach. In particular, most evaluations tend to assess the direct impacts of the programme on participants in the absence of a non-participant control group, which makes it impossible to isolate programme impacts from the counterfactual. Evaluations also tend to assume that all income transferred is additional income, which fails to account for opportunity costs (the income or production forgone by participating in employment programmes rather than working on the farm or elsewhere, which can be significant and substantially reduces the net value of income transferred *(Devereux and Solomon, 2006:24).* Several studies found that public works programmes had a positive impact on the beneficiaries, at least in the short term. In Colombia *Empleo* in Action, participants showed an increase in the numbers of hours of over 35 percent (from 23.7 hours per week to 33.3) and an increase of 9 percent in the total consumption of the households. However the increase in the consumption of food items like milk or meat was much higher (42 and 28 percent respectively) *(Departamento Nacional de Planeacion, Colombia, 2004),* though such increases is a regular pattern observed in all transfer programmes, and so not unique to public works. In addition, qualitative evaluation shows that the Productive Safety Net Programme (PSNP) in Ethiopia has had a positive effect on the well-being of beneficiaries. Analysis shows that 60 percent were less likely to sell assets to buy food in 2005 and 30 percent enrolled more of their children in school. Moreover, almost half the beneficiaries surveyed stated that they used healthcare facilities more in 2005/06 than in 2004/05. Interestingly most of the beneficiaries attributed those changes to their participation in the programme *(Devereux, 2006).*

In the case of Peru, *Chacaltana (2003)* found that the net gain derived from the programme was equal to 24 percent of the nominal transfer. Beneficiaries received a monthly salary of 300 soles, while their control group was able to generate 227 soles on their own, in absence of the programme. In the *Jefes* programme in Argentina in 2002, the net income benefit (after taking into account foregone income of the participant), was estimated as two-thirds of the AR$150.00 benefit. This net income benefit decreased to one-third of the transfer by May 2003 *(Galasso and Ravallion, 2004, and Galasso, 2004).* In the *Empleo* in Action in Columbia, the increase in the monthly employment income of the participants in the programme was on average close to 39 percent on income that would be earned without a programme, but was much higher for women and youths between 18 and 25 years old (90 percent for women and 54 percent for young people (*Departamento Nacional de Planeacion, Colombia, 2004).*

4.3.7.3 Ongoing review of facilities life cycle

In most countries, the maintenance of rural infrastructure, for example, roads falls under the responsibility of local authorities (councils) or is carried out (irregularly and ineffectively) by the communities themselves *(de Veen, AB 1, 1993).* Maintaining the assets created and sustaining the workfare intervention are important issues generally not addressed in most public workfare projects. This neglect can be attributed in large part to the lack of a sense of local ownership of the projects, since community involvement in project planning and design was not actively sought (e.g., Morocco workfare project). Even where, after the completion of the asset, the local communities are involved in their maintenance through the local communities' presidents, the unavailability of resources prevents them from maintaining the projects. To ensure ongoing review of facilities life cycle for labour based works, the interest had been on the following issues and as illustrated in Table 4-32 below.

- Government to create maintenance funds
- Assign responsibility for maintenance
- Establish framework for periodic maintenance
- Set – up of local committees.

Table 4-32 : Experiences with maintenance of rural infrastructure

Zambia In fact in most projects no practical arrangements were put in place to ensure maintenance nor were beneficiaries assigned the responsibility for that task. In the Zambia public works project, maintenance and sustainability of the public works programme was unlikely, because the project did not establish a framework for periodic maintenance of secondary and tertiary roads by the community or local authorities. The roads and bridges constructed have not yet been mapped and gazetted and there are no arrangements in place to ensure that this will happen. These facilities need to be comprehensively mapped, inspected and gazetted in order for the Government to maintain and rehabilitate them in the future. Alternatively, no efforts were made by the Government to assist the communities in setting-up local maintenance committees who could draw money from a Road Maintenance Fund to ensure sustainability. Interestingly, communities were given some training in maintenance of the assets, but communities are unlikely to engage in systematic maintenance without adequate financial provision and some guidance.
Egypt In Egypt, public works programme under the Social Fund for Development (SFD) began to address maintenance problems in 1999, by requesting that 'sponsoring agencies' (Governorates) deposit up-front 10 percent of total project costs for maintenance purposes in a separate bank account, matched by an additional 10 percent from the SFD. This was based on best practice experiences from other Social Investment Funds in other parts of the world.

However, these funds were rarely accessed due to the inability of Governorates to prepare adequate maintenance plans. This suggests that when even adequate financial planning and provision is made, there is no guarantee that maintenance work will be undertaken. In 2004, tripartite arrangements (between the governorates, NGOs and stakeholders) were reached in two governorates to define the roles and responsibilities of all stakeholders and began hiring local contractors to carry out periodic maintenance of roads, sanitation and potable water projects and canals. Lessons learned from this pilot will be taken into account as SFD has plans to scale up this maintenance scheme in the country's 26 Governorates.
Tanzania In Tanzania public works programme, communities have developed strategies to make sure that the created assets are maintained. Communities have formed various community groups depending on the type of created asset. For example, there are water committees, school communities and health boards. The government also allocated funds to cater for repair of assets and the funds were channeled through the local government authorities. The local government authorities also provided expert advice to communities.

Thus, the experience of countries (Table 4-32 above) differs a great deal with respect to maintenance of assets. In general, where advance preparation has been made and provisions were incorporated in the design of the project intervention including financial provision and community committees were formed with specially assigned roles and responsibilities, the created assets were maintained. Where there was no such advance preparation and provision, assets could not be maintained *(Ninno, Subbarao and Milazzo, 2009:38-40).*

4.3.7.4 Summary

At this stage, the parent administration (either national level or integrated local level) has lessons learnt from experiences of the previous project team so that what is planned for the future is better than what went before. The post – evaluation takes place for the above purpose. Impact assessments just find out how far the programme has been successful in meeting social, economic or environmental objectives. It defines the degree of benefits that have accrued to the intended beneficiaries of the project. For labour based works, maintenance agency and funds are to be identified. As most of these infrastructures are in the rural areas, local authorities (integrated local level) and communities are to be empowered and trained to take up the responsibility. The national level role is to make sure that funds are available for maintenance and that right channels are created to transfer the funds to the relevant level of responsibility.

Finally post project evaluation report and impact assessment report are written and get deposited into the legacy archive for future references.

4.4 Phase Reviews

4.4.1.1 Introduction

The purpose of phase reviews is to get 'Go / No Go' decision at each gate. The phase gates provide entry to each phase of the dynamic cycle. Each phase gate is opened to allow the work of the programme or project to proceed to the next phase. The phase reviews elements (see chapter 2) are:

- Phase review outcomes
- Gate status in the process
- Phase review membership
- Phase review duration
- Phase review planning
- Phase review report

4.4.1.2 Gate status in the process

According to the management processes for labour based works identified in this chapter, Table 4-33 summarises the stage gates and types which have been found.

Table 4-33: Gate status of the process

	Location	Gate status
Gate 1	Phase zero to phase one	Soft gate
Gate 2	Phase one to phase two	Hard gate
Gate 3	Phase two to phase three	Hard gate
Gate 4	Phase three to phase four	Hard gate
Gate 5	Phase four to phase five	Soft gate
Gate 6	Phase five to phase six	Hard gate

4.4.1.3 Phase review outcomes

Table 4-34 provides the phase review outcomes for labour based works as discussed in the previous sections of this chapter. These are also phase review reports which are deposited into the legacy archive for storage.

Table 4-34: Phase Review outcomes and reports

	Location	Outcome / report
Gate 1	Phase zero to phase one	Project concept (initial)
Gate 2	Phase one to phase two	Project Concept (full)
Gate 3	Phase two to phase three	Project / Financing Proposal
Gate 4	Phase three to phase four	Work plans
Gate 5	Phase four to phase five	Project concept (final)
Gate 6	Phase five to phase six	Final programme report
At end of phase six, the outcomes and reports are reviewed and evaluated and post project evaluation report and impact assessment report are produced and get deposited into the legacy archive.		

4.4.1.4 Phase review membership

4.4.1.4.1 National level

According to *Yahie, 1996:145; EP&PPM, 2005; Johannessen, 2000:11; and Muatjetjeja, 2006:68,* the phase review membership at national level for phases zero to phase six includes:

- Ministry of Planning
- Ministry of Finance
- Ministry of Local Government
- Ministry of Community Development
- District Assemblies (Councils)
- The National Statistical Office
- Ministry of Natural Resources and Environment
- Donors
- Ministry of Transport and Public Works
- Roads Authority
- Trade Unions
- Employers Federation
- Enterprise Development Units

4.4.1.4.2 Integrated local level

To promote the involvement of the target communities and organisation in not only planning but also in implementation and maintenance thereafter, the following is the phase review membership at integrated local level. This covers for phases zero to phase six of the management processes for labour based works *(Development Planning system Handbook for District Assemblies (Malawi), 2001:6-11; RAMPA (Malawi), Appendix 1, 2005; Nejadfard and Edmonds, AB 10, 2000:6-7).*

- District Executive Committee (DEC)
    - Representatives of line ministries at district level
    - Heads of assembly departments
    - NGO's representative at district level
    - Donors
- Area Development Committees
- Area Executive Committee
- Village Development Committee
- NGO's representatives at community level
- Chiefs (community leaders)
- Council members

4.4.1.5 Summary

The following phase review elements have been found in this section: phase review outcome and reports, gate status in the process and phase review membership. Six stage gates have also been defined – three are soft gates and the other three are hard gates. At national level the phase reviews do not involve the local communities but at integrated local level the communities are included through out the process from planning to implementation.

4.5 Chapter Summary

This chapter aimed at identifying management processes of labour based works based on the Process Protocol. As discussed in chapter 2, the Process Protocol was opted for as an assessment tool based on its principles and advantages. The chapter therefore discussed the Process Protocol Elements for labour based works as per the literature review in chapter 2 and using research methodologies in chapter 3. The review in the chapter has shown the following Process Protocol elements for labour based works.

4.5.1 Activity Zones

The activity zones operate through three operation levels. These levels through which LBIPs have been planned and executed are: national level, integrated local and project level. Table 4-35 summarises the team members of the activity zones when the labour based works programme is implemented with an independent programme management unit and is a national programme.

Table 4-35: Summary of activity zones

	Parties involved	
National level	Development management	Development Planners Suppliers of finance to client
Integrated local level	Facilities management *(Fig. 4-2; Table 4-2; Fig 4-3)*	District development planner - M & E - Community Development District engineer - technical supervisor - technical assistant Maintenance technician
Project level	Project management Resource management Design management Process management Health and safety management Change management Facilities management (assist setting up maintenance system before handover)	Project manager Contracts manager Civil engineer Civil engineering technicians Environmentalist M & E specialist & Sociologist Financial an administrative services *(Appendix 3 – annex 5; Fig. 4-1)*

National programmes are initiated at national level but get implemented at integrated local level. Small scale labour based works can be initiated and implemented at integrated local level. In this later case, the integrated local level assumes the responsibility of the national level functions and its responsibility is further delegated to the local community development structures such as Area Development Committee (ADC) and Village Development Committee (VDC). The project level can either be a line ministry at national level with its department at integrated level or an independent programme management unit is appointed. From Table 4-35 above a multi-discipline team is a necessity for planning and implementation of LBIPs.

Planning and financing of LBIPs are retained by either national level or integrated local level for policy and to show government commitment. Government commitment is crucial because expanding labour based methods requires that the government make significant changes in institutions, attitudes, and work habits, and that the government provide a steady flow of funds. Thus, ideally, support for the use of labour based methods should be built among the most senior government officials *(Stock and de Veen, 1996:11).* The facilities management is now commonly under the integrated local level for sustainability of the LBIPs. The national level makes funds available in either case. The project level responsibilities are the most problematic areas in capacity at national level and integrated local level. One shortcoming noted, however, is the lack of a team member for health and safety, statutory and legal management at all levels. At least health and safety issues are addressed in the procurement system and get monitored during construction but statutory and legal management is not. Since statutory and legal management is not a requirement in labour based works, it can arguably be said that there should just be health and safety management.

Table 4-36 summarises the institutional framework arrangement for implementation of labour based works.

Table 4-36: summary of institutional arrangements for LBIPs

National level (for national programmes)	Project steering committee Technical sub-committee Programme management unit
Integrated local level (for both national programmes and small scale programmes)	District Executive Committee Technical sub-committee Area Executive committee Area Development Committee Village Development committee

4.5.2 Phases and deliverables

Table 4-37 summarises the seven phases and management processes which have been found in this study relevant to labour based works and deliverables for each phase is shown in Table 4-38.

Table 4-37: Summary of phases and processes

	Phase zero		Phase one		Phase two	
	Demonstration of need		**Conception of need**		**Feasibility studies**	
National level		Prepare project concept(initial)		Prepare project concept (full)		Prepare project / financing proposal
				Prepare project brief		
			Stakeholder analysis	Revise execution plan		
		Prepare statement of need	Problem analysis	Finalise stakeholder list	Appoint feasibility study team	
		Prepare execution plan	Objective analysis	Finalize statement of need		Revise logframe
	Conduct household survey	Create enabling environment	Quality factors analysis	Build log frame		
	Construct poverty profile	Develop national development plan				
Project level					Scope the study	
					Evaluate the existing situation	Revise project brief
					Design the scheme	Revise execution plan
					Cost the options	Revise cost plan
					Cost / benefit analysis	Determine project selection criteria
Integrated local level	Prepare accessibility profile / SEP	Prepare district development plan				

	Phase three		**Phase four**		**Phase five**		**Phase six**	
	Prepare work plans		**Developing Production information**		**construction**		**Operation and maintenance**	
National level	Delegate authority	Revise project concept		Finalise project concept	Conduct closure meeting	Implement handover plan	Undertake ex-post evaluation	
	Set institutional framework	Revise work plan			Review final report		Undertake impact assessment	
	Recruit project team						Prepare Infrastructure maintenance plan	
Project level	Establish organisation structure		Recruit and orient project team		Authorise work	Prepare final report		
	Verify scope	Revise project brief						
	Identify project activities	Establish MIS	Launch the project	Procure work package suppliers		Undertake evaluations		
	Prepare activity schedule	Develop environmental plan	Building contracting capacity	Finalize project brief	Monitor recruitment of labour	Implement maintenance plan		
	Prepare activity budget	Prepare maintenance plan	Finalise health and safety plan	Finalise cost plan	Monitor sensitisation meetings	Progress review meetings		
	Allocate responsibilities	Establish procurement plan	Identify and select projects	Finalise execution plan	Manage general operational issues	Control cost and schedule		
	Establish funds management procedures	Establish audit procedures	Conduct baseline survey	Review and modify contract documents	Manage health and safety issues	Monitor procurement		
Integrated local level			Facilitate submission of projects	Inform the communities	Facilitate labour recruitment	Sensitise communities		

Table 4-38: Summary of phase deliverables

Phase zero	Phase one	Phase two	Phase three	Phase four	Phase five	Phase six
Poverty Profile	Stakeholder List (final)	Objectives	Institutional Arrangement (updated)	Organogramme (updated)	MIS (updated)	Impact assessment report
Decentralization Policy	Statement of Need (final)	Constraints / Opportunities	Organogramme (updated)	Standard of construction	Progress Reports	Post project evaluation report
Support Policy	Project Overall objectives	Training plan (Pilot)	Project Brief (updated)	Labour Supply	Risk Log (updated)	Infrastructure maintenance plan
National Development Plans	List of Strategies	Institutional arrangement	Execution Plan (updated)	Wage Rate (revised)	Cost Plan (updated)	
Poverty Reduction Strategy Paper	Logframe Matrix (initial)	Administrative structure	Activity Plan	Task Rate (revised)	Gantt Chart (updated)	
Project concept (Initial)	Project Concept (updated)	Project Monitoring	Gantt Chart	Training Institution	Maintenance Plan (updated)	
Statement of Need (Initial)	Project Brief (initial)	Environment Protection	Responsibility Chart	Community Mobilization Methods	Maintenance Manuals	
Execution Plan (Initial)	Project Execution Plan (updated)	Wage Rate	Cost Plan (updated)	Labour Recruitment Methods	Evaluation Report	
Stakeholder List (Initial)		Task Rate	Financial Management Plan (updated)	Training Manual		
		Incentive Schemes	Procurement Management Plan (updated)	Trained Supervisors		
		Preliminary Technical Design	Audit Management Plan	Project Selection Criteria		
		Sources of equipment / Tools	Maintenance Plan	Registered Contractors		
		Labour availability	Environmental Plan	Contracts Documents		
		Finance disbursement procedures	M & E System	Health & Safety Plans (final)		
		Women participation	Project Concept (updated)	MIS		
		Preliminary schedule		Baseline indicators		
		Cost plan		List of Projects		
		Economic benefits		Cost Plan (final)		
		Social benefits		Gantt Chart (final)		
		Project / financing proposal		Technical Designs (final)		
		Logframe (updated)		Shortlist of Contractors		
		Project brief (updated)		Qualified Contractors		
		Execution plan (updated)		Procurement Plan (revised)		
				Project Concept (final)		
				Project Brief (final)		
				Execution Plan (final)		

The review has shown that not all activities could be deemed relevant to labour based works. Table 4-39 summarises some of processes which have not been fully discussed in this chapter. Take note that phase two and phase three of the Process Protocol (Appendix 1) are merged into phase two of management processes of labour based works. Likewise, phase four, phase five and phase six of the Process Protocol are collapsed into phase three according to the findings.

Table 4-39: Summary of processes not relevant to labour based works

	Design management	Production management	Facilities management	Health and safety, statutory and legal management
Phase one	Prepare design brief	Prepare design brief		
Phase two	- Prepare concept design brief - define key systems and criteria			- inform on statutory and regulatory issues - prepare CDM assessment
Phase three	Prepare outline concept designs - prepare full concept design - produce product model	Inform design process	-prepare full concept design - produce product model	Revise CDM assessment
Phase four	Finalise coordinated product model		Finalise coordinated product model	
Phase five	Develop operational product model		Develop operational product model	

The issues on health and safety, statutory and legal management have already been discussed under activity zones above. The rest of the processes in Table 4-39 above might be model specific activities as the Process Protocol was modelled on a building project where level of design and facilities management is at higher standards compared to roads under labour based works.

For each phase, a process flow diagram has been constructed. The process flow diagrams are indicating the relationship of processes among the activity zones: national level integrated local and project level. The models are for national programmes whereby the planning and financing

are at national level and integrated level is key role player in implementation. The project level in this case is handled by a programme management unit which, if capacity is available, can be allocated to a line ministry (e.g. ministry of works) and to a line department (e.g. public works) at integrated local level.

For small scale LBIPs at integrated local level, the Integrated Rural Accessibility Planning (IRAP) (see phase zero) does planning for phase zero to phase two. IRAP tool integrates demonstration of need, conception of need and feasibility studies into one continuous process. The feasibility studies at national level are conducted by an independent team but for IRAP, it is the local authority and rural communities (beneficiaries) through Village Development Committees (VDC) and Area Development committees (ADC) at village level and District Executive Committee (DEC) at integrated local level. Thus it promotes popular participation. For phase three to phase six, the integrated local level replaces the functions and responsibilities of the national level and where the integrated local level assisted the national level, the VDC and ADC at rural community level take the responsibility.

4.5.3 Phase reviews and legacy archive

At the end of each phase, there have been review meetings before passing through the stage gate into the next phase. During these meetings, reports have been produced and get deposited into the legacy archive. At the end of phase six the rest of the reports are reviewed and evaluated to produce a post evaluation report and for labour based works programmes, there have been impact assessment whose report is also fed into the legacy archive as lessons learnt to improve future programmes. Table 4-40 summarises the phase review outcomes and reports, membership, stage gates and gate status

Table 4-40: summary of phase reviews

Stage gate	location	Gate status	Outcome / report	Typical membership of phase reviews	
				National level	Integrated local level
Gate 1	Phase zero to phase one	Soft gate	Project concept (initial)	Ministry of Planning Ministry of Finance Ministry of Local Government Ministry of Community Development District Assemblies (Councils) The National Statistical Office Ministry of Natural Resources and Environment Donors Ministry of Transport and Public Works Roads Authority Trade Unions Employers Federation Enterprise Development Units NGOs	District Executive Committee (DEC) - Representatives of line ministries at district level -Heads of assembly departments -NGO's representative at district level -Donors Area Development Committees Area Executive Committee Village Development Committee NGO's representatives at community level Chiefs (community leaders) Council members
Gate 2	Phase one to phase two	Hard gate	Project Concept (full)		
Gate 3	Phase two to phase three	Hard gate	Project / Financing Proposal		
Gate 4	Phase three to phase four	Hard gate	Work plans		
Gate 5	Phase four to phase five	Soft gate	Project concept (final)		
Gate 6	Phase five to phase six	Hard gate	Final programme report		
	Phase six to legacy archive		Post project evaluation report Impact assessment report		

The chapter has therefore fulfilled objective no 1 (chapter 1) of identifying the management processes of labour based works using the Process Protocol as the assessment tool as described in chapter 2. All the Process Protocol elements such as activity zones, phases, deliverables, phase reviews and legacy archive have been discussed. The next chapter will identify risks and risk management methodologies in labour based works. These are factors which have had an adverse impact on the improvement of the management processes of labour based works.

5 CHAPTER 5: THE KEY RISK FACTORS IN IMPROVING THE MANAGEMENT PROCESSES OF LABOUR BASED WORKS

5.1 Introduction

There have been uncertainties associated with construction projects. These uncertainties or risks reduce the probability of meeting the project objectives. One of the components of construction project management is therefore to provide an outline of project risk and opportunity, and methodology for reducing risk to an acceptable level. Based on the literature on the already implemented labour based works programmes, this chapter is aimed at identify the key risk factors affecting the improvement of the management processes of the labour based works. Next it will identify the ways how the researchers and practitioners had been responding to the risks. And finally monitoring and controlling approached as the risks occur shall be isolated.

5.2 Risk identification & risk response

There are many ways of categorizing risks which can help in identifying the risks on projects. In this study, however, the risks have been categorized according to the labour based works project management knowledge areas. These are:

- Project complexity
- Procurement management
- Financing of equipment for Small and Medium Enterprises (SMEs)
- Financial management
- Labour wages
- Seasonal variations of labour
- Targeting methods of beneficiaries
- Incentive schemes
- Maintenance of rehabilitated infrastructure
- Local participation
- Safe working environment
- Political will and commitment

Under each category, there is at least a discussion on general description, impact / consequences, causes and finally responses. The actual content depended on the availability of such experiences in the literature. Hence there might be variations in content across the risk areas.

Some risks have been identified from the assumptions analysis, for example Malawi - GoM / EU PWP log frame and EPWP log frame. Data from past projects of similar work content have been useful sources of risks.

5.2.1 Project complexity

- Loss of key team members *(Malawi – GoM / EU PWP, Final Report 2005; Ghana – Stock, 1996:17).*
- Inexperience of project team (client) to monitor, administer and control contracts *(Ghana, Zambia – Bentall, Beusch and de Veen, 1999:79, South Africa - EPWP log frame 2004 - 2009)*
- Inexperience of SMEs to manage large labour force *(Nilsson, AB 2, 1993:1).*
- The completion of the roads in Namibia was delayed beyond the estimate made in the project appraisal by 21 months. This was due mainly to the difficulties experienced by the consultant in setting up a large labour based road construction project in which the construction work was under the responsibility of private contractors. This approach was an innovation for Namibia where road construction works were monopolized by the state owned Roads Construction Company before *(KFW Ex-post Evaluation Report, 2002).*

Responses

Piloting (training) and use of private sector – contractors and consultants.

- The Lesotho government decided in early 1990s that labour intensive road works must be privatized *(Twumasi-Boakye, 1996).* However, the domestic contracting industry had no capacity to takeover labour based road works. Consequently a small contractor training was started in 1993 *(ibid).*
- The Botswana government decided that labour intensive methods should be used by District Councils, under Ministry of Local Government and Lands. During 1980 –

1982, a pilot project was implemented in the central District for labour intensive "district road" construction and maintenance *(ibid, Muatjetjeja, 2006:37)*

5.2.2 Procurement management

- SMEs not able to face surmountable challenge of competitive bidding from experienced equipment based contractors who may wish to tender due to either scarcity of jobs on the market or profit potential of labour based works *(Ghana – Airey, AB 20 2006:7).*
- SMEs have little experience in working to specified technical standards under a contract *(Nilsson, AB 2, 1993:1; Croswell and McCutcheon, 2001:366).*
- Collusion among the SMEs *(South East Asia – Bentall, Beusch and de Veen, 1999:65)*

Responses

- *The case of Cajamarca (Peru)* in 2003 the micro and small enterprise promotion law was passed, which stipulated that 40% of all procurement executed by public institutions must be carried out with these enterprises, as well as their preferential treatment in respect to larger enterprises and their access to information about upcoming tenders*(Yeng and van Dissel, AB 18, 2004:10).*
- The Department of Feeder Road (DFR) / MST programme in Ghana instituted a 10% margin of preference for labour based contractors (LBCs) to encourage them to compete for work against their small equipment based competitors *(Airey, AB 20, 2006:7).*
- Small contractors may need assistance with training in tendering procedures and relaxation of sureties and performance bonds, in view of the relatively small value of their work. They could also be offered incentives such as mentorship schemes, or subsidies on fees to engage professional advice of consultants. Depending on the level of development of the contractors, it may be necessary to award contracts based on set, negotiated, or competitive rates *(Sibanda AB 9, 1999:8).*
- The experience of ILO in Madagascar showed that the use of SMEs is economically viable provided it is backed by suitable training and support system including simplified contract bidding procedure *(Garnier and van Imschoot, 1992),* and the award of the contracts in small lots *(Garnier and Majeres, 1992:63).*

5.2.3 Financing of equipment for SMEs

- Small contractors working on labour-based infrastructure programmes often have limited access to formal financial services and hence acquisition of construction equipment is a major constraint to market entry and growth. This can result in the use of the wrong type of equipment or in liquidity constraints during the execution of the works and equipment breakdowns and repairs will be a problem *(Deelen, AB 13, 2002:9; Twumasi – Boakye 1992; Ashong, 1996*).

Responses

- Bridge financing large loans for short terms are given out, using a construction contract as a guarantee (*Deelen, AB 13, 2002:9).*
- Another option for contractors is to look for a leasing arrangement (*Deelen, AB 13, 2002:9).* The ILO assisted in the setting up of leasing schemes for small contractors in Uganda, Ghana, Zambia, and Sudan.
- There had been use of locally manufactured hand tools in Lesotho. The manufacture of hand tools for which prototypes had been made by Tools Specialist was quite feasible in Maseru (*Lehobo pro. 1993).* In Sierra Leone the roads authorities experienced that locally produced machets manufactured from used vehicle springs performed better than imported models *(Petts, pro, 1993).*
- Banking loans (Hire purchase) – This option entails that the government establishes a separate agreement with a local bank or financing institution and transfers the equipment to this bank which then provides the plant to the contractors on a hire-purchase basis. In Ghana, the light equipment issued to the contractors was procured by the Bank of Housing and Construction (BHC) with the bank providing a loan to the contractor which was to be repaid over a 4 year period *(Bentall, pro, 1992).*
- Tax holidays and tax concessions, for example relaxation of import duty on capital investment; have been used in a number of countries to assist emergent contractors. *(Sibanda, AB 9, 1999:9).*
- Hire from Government pool – If the contractors hire the equipment from the government, this will imply that the contractors would not need to involve them self in any great capital investments. The equipment rent could be recuperated through reductions from

the payment certificates *(Johannessen, 1996:54).* In Ghana, the Bank for Housing and Construction provides assistance to contractors in the form of bank guarantees and loans, as well as commercial banking services; in addition, it had set up a subsidiary plant pool company, which hired equipment funded by donor assistance to contractors *(Parkman, Madelin, Robinson and Toole, pg 425).*

- Hire from Private Owned Plant Pools- Under this arrangement, the government could transfer equipment to a private plant pool who would be responsible for maintenance and operation of the equipment *(Johannessen, 1996:54).*

5.2.4 Financial management

- Zambia *(World Bank, 2006)* and Malawi *(GoM / EU PWP Malawi Final Report, 2005)* delayed payment to the contractors on labour based works projects. Ghana delayed for six months. Colombia delayed for eight months *(Henroid, 1984)*
- Malawi *(GoM / EU PWP Malawi Final Report, 2005)*, Dominican Republic *(Henroid, 1984)* delayed payment to labour force.
- There have also been lack of project and financial management skills by most SMEs *(GoM / EU PWP Malawi Final Report, 2005).*
- Labour Intensive Work Programme in Afghanistan ran into serious delays which not only resulted in what had been an 8 month programme becoming over 18 months but also led to a situation where some of the labourers were not paid for three months after the project had been completed *(Johnson, 2004).*

Causes

- Late payments are in inherent part of road construction industry because many road building agencies in Africa award contracts without ensuring that the required funds will be available and have highly centralized and bureaucratic payment procedures *(Edmonds and Miles, 1984:47; Ofori, 1991; Stock, 1996:20).*
- Waiting for many days for contractors in Lao PDR to get signatures by some of the staff responsible for different steps of the invoice handling process had been quite common *(Johannessen, 1996:65).*

- In Zambia, there was poor coordination among the several institutions involved in the multiple layers of disbursement and approval, exacerbated by lack of pro-activity *(World Bank, 2006).*
- 'Raiding' or reallocation of the funds can adversely affect contractors who will have made investments based on the perceived market *(Sibanda AB 9 1999:9).*
  For example, in the Central African Republic, the Ministry of Finance borrowed money from the road fund to pay civil service salaries *(Heggie 1995, Stock and de Veen 1996:17).*
- In countries pursuing the contracting route, an interim payment certificate may have to pass through twenty five to forty five checkpoints before it is paid – and irregular practices can delay each signature *(Lathran, 1993).*
- Procedures in most developing countries require considerable paperwork, signatures and vetting, taking weeks to complete. For example in the Honduras force account programme, paying unskilled labour required thirty five administrative steps, involving many ministry and several departments *(World Bank, 19986).*Also workers had to present the following personal documents to get their wages, an identity card, a municipal tax card, and income tax liberation proof, for which they had to pay US$0.25 (1978 prices) for form and tax stamp *(Stock and de Veen, 1996:18).*
- Submission of falsified information by SMEs *(GoM / EU PWP Malawi Final Report, 2005).*

Responses

- In the Namibia White Paper for Labour Based Works, one of the policy statements stipulated that the contracts should include a specified period after which interest at bank overdraft rate would be automatically paid to suppliers/service providers/ contractors in respect of overdue payment.
- Decentralizing payment systems can also benefit small contractors *(Sibanda, AB 9, 1999:9).*
- Donors have therefore established special accounts that are held separately from the general government budget. They are usually set up in a commercial bank in the name of the agency supplying the road services. For example, in 1994 the United States Agency

for International Development (USAID) and the Danish International Development Agency (DANIDA) set up a special account for the Department of Feeder Roads in Ghana to pay for labour based rehabilitation. In 1989, the World Bank set up a special account for *Agence d'exécution des travaux d'intérêt public contre le sous-emploi* (AGETIP) in Senegal to expedite payments to small firms *(Stock and de Veen, 1996:20).*

- Advance payment granted under the contract for works, especially in multi year contracts *(Lantran, AB 5, 1996).* In Ghana after completion of training, Contractors on the standard contracts did receive an *Advanced Mobilisation Loan* which was the equivalent of 10 -15 % of the contract value less contingencies and general items (*Osei – Bonsu, pro. 1992).* The Colombian micro-enterprises awarded a 20 per cent advance payment to help purchase tools and equipment; this was paid back over the term of the contract *(Parkman, Madelin, Robinson and Toole, pg 425).*
- Training in preparation of payment certificates and measurement of works *(RAMPA – Malawi – Appendix 2,2005)*

5.2.5 Labour wages

- Labour wages are set on ad hoc basis leading to cross country variations in the relationship of programme wage, market wage and minimum wage *(Ninno, Subbarao and Milazzo, 2009:20)*
- Escalation of statutory minimum wage rate with the government refusing to raise program wage leading to reduction of the real programme wage rate to low levels *(Botswana – Muatjetjeja, 2006:44)*
- Escalation of programme wages by bargaining or influence of the government during the implementation period (*RAMPA – Malawi Appendix 2, 2005).* The wage in Malawi on RAMPA project in Ntchisi District rose from MWK60.00 to MWK200.00.
- Extremely low relative wages will first result in a lowering of the quality of job applicants and only at a later stage lead to a reduction of the number of applicants *(Bentall, Beusch and de Veen, 1999:184).*
- The willingness of labour to work in civil construction depends on: earning differentials relative to alternative employment; the wealth of the individual (such as the extent of landholdings); any additional work-related costs of food, housing, and transport;

the disutility of work in terms of leisure forgone; the method of payment (that is, check or food); and the regularity of payment *(Stock and de Veen, 1996:9)*

Impact

- The wage rate determines the distributional outcomes of the programme to the poor *(Subbarao 1997:5).* In Burkina Faso in the early 1990s, public works wages were set as low as one-third of the national minimum wage, in order to minimize 'leakages' to the non-poor *(von Braun 1991).* Although this strategy was successful in terms of targeting the 'poorest of the poor', the income transferred was so low that there was no discernible impact on poverty reduction, and even the 'safety net' objective was compromised *(Devereux and Solomon 2006: 6).*.
- The programme wage at a level no higher than the ruling market wage rate for unskilled labour helps keep overall costs down *(Subbarao 1997:5).*
- The wage rate determines the attendance of labour force.
    - In Tanzania and Botswana, because the programme wage rate was maintained at a level higher than it was in comparable unskilled activities, jobs had to be rationed - particularly during droughts when the poor's need for participation in public works was the greatest *(Teklu, 1994b).*
    - The programme wage in Kenya and the Philippines was also found to be higher than the market wage for unskilled labour; as a result substantial numbers of the non-poor were attracted to the programme *(Teklu, 1994a, Subbarao, 1995).*
    - In Botswana, when the wage rate fell from 75% in 1980 to 40% in 1995in proportion to the Public Sector minimum, the programme began losing workers to drought relief programme and recorded a decline in the annual road construction outputs and expenditure *(Vaidya, 1983; Muatjetjeja, 2006:106).*

Responses

- For this reason it is often useful to consider supplementary targeting mechanisms that ensure the poor are targeted and reduce the need to set the wage low for self-targeting. Under conditions of labour market failure for example, it may be preferable to combine a higher wage with a supplemental targeting mechanism *(Barret and Clay, 2003).* South Africa's Zibambele project provides a good example of this, with a wage rate higher than

that usually paid in South Africa's public works programmes, and with supplemental community selection methods to ensure that participants are almost exclusively from the poorest households *(Mc Cord 2005d; Samson, van Niekerk and MacQuene, 2006:104&105).*

- Contracting to the private sector to exploit traditional contractor's expertise in setting wage rates for labourers *(Nilsson, AB 2 1993:1).*

5.2.6 Seasonal variations of labour

- Labour is scarce at certain times of the year due to agricultural activities reducing the task rates *(Ghana – Twumasi – Boakye 1992; Ashong, 1996; India – Saxena and Ravi, 2006; Tanzania – Subbarao, 2003:20)*

Impact

- In India, for example, agricultural wages typically increase by 30 percent to 80 percent or more during peak seasons, which are four months out of the year in rain-fed areas, and as much as eight months out of the year in irrigated areas *(World Bank, 1976).*
- In Kenya, seasonal opportunities in coffee- and tea-producing areas make labour scarce at certain times of the year. Thus, unless wage rates can be revised in response to changing site conditions or seasonal considerations, there may be wide fluctuation in labour availability *(World Bank 1986).*
- In Zambia by imposing a regulation that public works activity be confined to 4 – 5 hours a day was found to be difficult and it raised the implicit daily wage rate *(Ninno, Subbarao and Milazzo, 2009:30).*

Responses

- During the busy agricultural season, the work programme can be adapted accordingly, for example, by adjusting the working hours, reducing the task size or cutting the overall number of workers for the period concerned. In Sierra Leone, during the peak agricultural season, the contractors started the working day at 6 a.m. so that most workers were able to finish their task by 11 a.m. After lunch, the same workers could attend to their activities in the agricultural sector *(Tajgman and de Veen, 1998:104 &105).*

- Afghanistan ran the public works programme during the peak agriculture season and found it difficult to recruit persons, probably because the wage rate was correctly set below the current agricultural wage rate *(Ninno, Subbarao and Milazzo, 2009:30).*
- In Tanzania, public work programmes were set to be carried out in the dry season so as to minimize disruptions of agricultural activities *(Ninno, Subbarao and Milazzo, 2009:30).*

5.2.7 Targeting methods of beneficiaries

- Unclear procedures for targeting the poor geographical areas and beneficiaries *(Afghanistan – Johnson, 2004)* because of Political manipulation of funds (*Weitz-Shapiro 2004: 7)*. For example, the allocation of programme funds between provinces or states might be politically biased – favouring the party in power or its supporters – rather than determined by objective indicators of need, even if the process of selecting individual programme participants is pro-poor.

Responses

- In Bangladesh, rural infrastructure programmes adopted targeting mechanisms that aimed to achieve both efficiency and equity, by minimizing administrative overheads while maximizing coverage of the poor. Firstly, the programmes are decentralized and adopt participatory approaches (thereby reducing administration costs), partly by involving local government institutions, NGOs and community-based organizations. Secondly, means testing (assessing each individual's wealth status) is complemented by indicator-based targeting – including the obviously poor on the basis of easily identifiable indicators, such as landlessness and female-headed households. *Mujeri* suggests that an effective way of reducing mis-targeting in employment programmes is to strengthen and institutionalise local participatory processes, in order to access and share relevant information about potential participants at the local level. Also, given the evidence from Bangladesh and elsewhere of significant 'Type I' and 'Type II' errors – inclusion of the non-poor and exclusion of some hard-core poor – *Mujeri (2002: 33)* argues for more restrictive targeting criteria, involving means testing rather than self-targeting *(Devereux and Solomon 2006: 7).*

- There is evidence showing that the use of multiple targeting methods makes the identification of the neediest more accurate and comprehensive, improving the targeting performance *(Coady, Grosh, and Hoddinott, 2004; Ninno, Subbarao and Milazzo, (2006: 26).*

- The use of poverty mapping for geographical targeting may help focus the areas with higher poverty concentration within the country (*Ninno, Subbarao and Milazzo, 2006: 27).* This has been done in Malawi, where targeting for participation in the (Malawi Social Action Fund) MASAF public works was based on the Vulnerability Assessment Mapping System (VAM) data, which takes into account factors such as food availability at the household level, the availability of coping mechanisms, and land. Then, the management unit of MASAF in conjunction with the Poverty Monitoring Unit is responsible to develop a suitable index and cut-off point of eligible areas. In Peru under A *Trabajar Rural* programme implemented by the Peruvian Social Investment Fund (FONCODES), the poor are targeted through selection based on a poverty ranking of districts using the poverty map developed by the Ministry of Economy and Finance. The programme only intervenes in the poorest districts. The projects are identified by communities together with the municipalities and presented to *A Trabajar Rural (Cuya and van Dissel, AB 19, 2005:28).*

- When labour availability fluctuates so that labour-based programmes face a greater supply of workers than is needed for the jobs available, site managers can use a lottery system with community selection techniques (*Mccord,2003:33; Adato and Haddad, 2002)* to minimize recruitment problems and eliminate the risks of favouritism and nepotism. Such a system is used in the Kenya program *(World Bank, 1986)* and Cambodia *(Schulz and Huyssteen 1999:14).*

5.2.8 Incentive schemes

- Low productivity due to under-tasking for example in Ghana *(Stock, 1996:17, Danso, 1996)* and selection of unacceptable type of incentive scheme *(de Veen and Thagesen, 1995:382).*

Responses

- Evidence from India and Indonesia indicates that incentive payment systems, such as task rate or piece rate may raise labour productivity by a factor of three compared to daily wage systems *(World Bank 1976; Stock and van Veen 1996:14)).* Yet, in some developing countries, instituting a piece- or task-rate system may be unconstitutional or be opposed by labour unions or labourers themselves.
- Some contractors in Sierra Leone successfully adopted an incentive system to increase labour attendance. One extra task-rate payment per week was given if the worker was present at work the entire week. *(Tajgman and de Veen 1998:105).*
- In Ghana to ensure a constant labour force for effective planning and achievement of constant output (minimum of 100m of finished road daily), additional incentive schemes in the form of bonuses were to be used to motivate the workers *(Tajgman and de Veen 1998:117).*
- In Ghana to combat under-tasking by supervisors, the contractor would calculate exactly what should be accomplished and know which supervisor was supervising each task. If the amount of work accomplished fell short of the calculations, the contractor could punish the supervisor who was responsible *(Stock 1996:17).*

5.2.9 Maintenance of rehabilitated infrastructure

- There have been lack of adequate funds to maintain infrastructure after completing construction and non-inclusion of a method on maintaining the asset created in the projects *(Zambia - Ninno, Subbarao and Milazzo, 2009:39).*
- The potential for financing all investment is small because most developing countries where labour based works are embarked have economies which are already in debt *(stock and de Veen, 1996:19*).

- This also result into lack of business continuity for the trained SMEs *(Ghana – Croswell and McCutcheon, 2001:371)*

Responses

- Most countries and donor agencies have shifted their focus from new investment to rehabilitation *(Heggie 1995).*
- Creation of separate surcharge on fuel to be used for rehabilitation. Both fuel levies will be held separately, and reviewed and amended annually to match ongoing revenue requirements *(Zambia - Stock and de Veen 1996:19; Kenya -Goss, AB 13, 2002:7).*

- For roads projects, there have been establishment of Roads Funds and Roads Authority. For example in Lesotho *(Sable, AB 5 1996)* and Sierra Leone (Heggie, 1995) a Road Fund and Road Authority were established to give the Labour based works activities a continuous source of income for the maintenance and upgrading of all its rural roads.
- In Yemen, Schools allocated certain portion of school fees to meet operational or maintenance costs. In Tanzania public works programme, communities have formed various community groups depending on the type of created asset. For example, there are water committees, school communities and health boards. The government also allocated funds to cater for repair of assets and the funds were channelled through the local government authorities. The local government authorities also provided expert advice to communities *(Ninno, Subbarao and Milazzo, 2009:38-40).*

5.2.10 Local participation

- Creation of infrastructure/assets that are not needed by the community. This creates lack of ownership of the asset created and may lead to no maintenance of the asset. Communities may as well not help on the site supervision of the project thus contribute to poor quality of the asset created *(Morocco - Ninno, Subbarao and Milazzo, 2006:38).*
- Provision of access to women to direct wage employment *(Dejardin ,1996; and Swamy, 2003)* though they cannot match men in doing manual work because:

- Poor women suffer from poverty and also from gender- based exclusions, which make it even more difficult than it is for men to rise out of poverty *(Bamberger and Kerenge, 1996:69).*
- While poverty affects both men and women, women's experience of poverty is different – and usually more severe – because of "gender – based forms of exclusion*" (Heyzer, 1992).*
- Equal treatment of male and female workers is therefore another issue to be taken seriously. Men and women should get equal pay for comparable tasks, as well as equal access to employment and higher level supervisory and management jobs *(de Veen, AB 8,1999:9).*

Responses

- In order to sustain the new irrigation infrastructure for the Dhaulagiri Irrigation Development Project (DIDP) in Nepal in 1989, popular participation was conceived not only as involving farmers in construction and rehabilitation of irrigation schemes, but mainly as a means to develop institutional, financial and administrative units which a community needs to operate and maintain an irrigation scheme. Farmers and committee members received relevant training to develop and improve local skills *(Lokollo,AB 8, 1999).*
- The involvement of community organizations and adoption of objective criteria and well-defined rules and procedures act as a satisfactory screening mechanism to exclude unintended beneficiaries even if no explicit targeting mechanism is adopted by virtue of their comparative advantage *(Mujeri, 2002: 35).*
- The Department of Feeder Roads in Ghana identified target groups, politicians, community leaders and other opinion leaders to participate in project seminars and promotional meetings (ibid)
- A minimum percentage of women participation is set in the project guidelines (*Ninno, Subbarao and Milazzo, 2006: 32).* For example, Malawi – GoM / EU PWP the target was set at 30%, South Africa (EPWP) it was 40% and Zambia had 60% *(Subbarao, 2003).*

5.2.11 Safe working environment

- SMEs lowering working conditions to enhance profits resulting in low productivity due to lack of motivation of workers *(de Veen, pro 1999:124).*

Impact

- Where contracts are concerned, the related costs on health and safety e.g. insurance and protective clothing should be borne by the responsible contractor, who in turn should be in a position to pass on these costs to the client through a specific item in the contract *(de Veen, AB 8, 1999:9).*

Responses

- In India, a list of basic welfare and health facilities to be provided by contractors on site is set out in law: Drinking water, First-aid facilities, Latrines and urinals *(Tajgman and de Veen, 1998:133).*

- In Cambodia, the application of relevant labour standards for labour based rural infrastructure rehabilitation project was incorporated into counterpart staff training and could be observed in the project's daily activities (*Bentall, Beusch, and de Veen, 1999:197).*

- Poverty reduction strategy papers or development plans must not only consider job creation but also should identify decent work (*Stenstrom, AB 20, 2006:4).* This was piloted in Ghana. Similar excises were also done in Mali, Tanzania and Pakistan *(ILO, World Bank and IMF – PRS, 2002).*

- An essential minimum is some form of insurance coverage for work-related injuries, complemented by measures to avoid accidents on worksites *(de Veen, AB 8, 1999:9).* Clause 4 & 5 of Cambodia's general conditions of contract for infrastructure improvement project states contractor's obligation to provide insurance of employees and risk and public liability insurance *(Johannessen, 1999).*

5.2.12 Political will and commitment

Poor political will and commitment towards labour based works by government and beneficiaries (*GoM / EU PWP, Malawi; EPWP Logframe -2004 – 2009).* Yet even after these misconceptions were corrected, developing countries still resisted adopting labour-based methods. A review of the experience in countries such as Bangladesh, Botswana, Brazil, Colombia, Guatemala, Haiti, Kenya, Mexico, and Thailand reveals many reasons why government officials might prefer equipment-based methods to labour-based methods *(Stock 1996:2 -3).*

- Gravel road rehabilitation is comparatively faster using equipment-based methods than using labour-based methods. For example, in Ghana equipment-based rehabilitation is approximately 1.5 times faster than labour-based rehabilitation *(Ashong 1994).*
- Equipment-based methods, when properly executed, also are capable of achieving a better riding surface than labour-based methods, which is important for heavily trafficked roads.
- Equipment-based methods minimize labour management problems because these methods typically require about ten permanent labourers per gravel road while labour-based methods require more than 100 casual labourers per gravel road *(Edwards 1974; Edmonds and Miles 1984:30).*
- Experiences with labour-based programmes in Asia have shown them to be plagued by problems of poor supervision, corruption, and low worker motivation *(Riverson and others. 1991).*
- Government officials who supervise the sites have added phantom workers to the payroll in some cases, and many projects have been referred to as "make-work" projects because worker productivity has been so low *(Gaude and Watzlawick 1992; Bruton 1974).*
- Equipment-based methods may also have political benefits because government officials can quickly mobilize equipment to do work for their supporters, whereas labour is more difficult to mobilize. Before elections, top government officials in one Southern African country used government tractors to plough farmers' fields and thus gamer votes.
- In addition, equipment-based methods offer more opportunities for rent-seeking since engineers and other civil servants have more contact with established contractors and can gain the benefits of such a relationship.

- Equipment-based methods also require less working capital, which is a concern for most cash poor governments.
- Equipment-based methods can command more funding than labour based methods if donors only finance the foreign exchange costs of a project (*Tendler, 1979a).*

Response

- In the mid-1970s the World Bank used a unit-rate analysis to re-evaluate a road construction project that had been completed using equipment-based methods in Kenya, a low-wage country. This analysis showed that the roads could have been built more cheaply using labour-based methods *(Tendler 1979a).* Because this framework demonstrated that labour-based methods were cheaper than equipment-based methods in most of Sub-Saharan Africa, the World Bank and the IL0 began to justify using labour-based methods on financial and not just economic grounds *(Stock, 1996:3).* To develop stronger arguments for using labour-based methods, pilot projects were implemented in Lesotho and Botswana *(ibid),* Kenya *(McCutcheon, 1988);* Ghana *(Ashong, 1996).*

5.3 Risk monitoring and control

Risk management is a continuous process throughout the life cycle of the project. Monitoring and controlling of risk is very essential. Some of the techniques and tools which are employed in labour based works to monitor and control risks include:

- Progress meetings and progress reporting
- Progress performance measurement
- Cost simulation
- Schedule simulation
- Change request approvals
- Measurements & payments for SMEs
- Labour attendance register

5.3.1 Progress meetings and progress reporting

Site Meetings and progress meetings provide a formal arrangement for checking contractor's performance against the work programme and providing on spot solutions to site problems.

Reporting requirements are important as a management tool to monitor progress and take corrective action in case deviation from the programme are noticed *(Zambia - Tembo and Blolhuis pg 16; Malawi IGPWP – see chapter 4, section 4.3.6.6).*

5.3.2 Labour attendance register

Time cards and muster roll forms can be used as control tools in monitoring the payment system to labour and labour attendance *(Tajgman and de Veen, 1999:107).*

- Each worker engaged is given a time card which must be kept by him/her and signed daily by the site foreman after the worker's daily task has been accomplished and approved.
- The muster roll for each activity contains the names of all workers on that activity and is marked by the site foreman daily after the worker has accomplished the day's task.
- Each worker's days recorded on his/her time card must tally with the information on the muster roll. The time cards and muster rolls are the basis for the computation of workers' monthly wages, which may include bonuses as incentives.
- For verification of the worker days used, the site manager should check time cards and muster rolls for each activity against the worker days recorded on the weekly reporting forms.

5.3.3 Measurements & payments for SMEs

Measurement and valuation is clearly a prerequisite to certification and payment of works. Most contracts are of the bill of quantities type (ad measurement contracts) and their measurement and valuation are governed by the conditions of contract. There have been three stages of monitoring and controlling payment to the contractor: advance payment, interim payment and final payment certificates *(Cambodia - Johannessen, 1999: 24 -25, Zambia - Tembo and Blolhuis pg 18 – 20).*

(a) Advance payment

Advance payments as stipulated in the Conditions of Contract may be paid to the contractor upon submission to the Employer of a Bank guarantee or if acceptable, Insurance guarantee. These funds assist the contractor in the initial stages of implementation of Works such as payment of wages for the first month and mobilization

of plant and materials. The Supervising Consultant should ensure that the Advance is repaid in accordance with the provisions of the contract.

(b) Interim payment certificates

At monthly intervals, the contractor must submit to the Supervising Consultant a statement or valuation based on the agreed measurements. The valuation must show the estimated value of the measured works executed up to the end of the previous period as well as the estimated value of work completed during the month in question. The valuation once checked and amended by the Supervising Consultant, where necessary, is used by the Supervising Consultant to prepare the Interim Payment Certificate. Interim Payment Certificates are useful in maintaining liquidity for the contractor. Therefore, the Supervising Consultant must not unnecessarily reject whole sections of works claimed by the Contractor, but make amendments for unsatisfactory works.

(c) Final payment certificate

As soon as the works are substantially completed or upon termination of the Contract (at an earlier stage), the Supervising Consultant and the Contractor must conduct a joint inspection and take final measurements of the completed works. Based on the final measurements and As-Built Drawings a Final Payment Certificate is prepared by the contractor and agreed with the Supervising Consultant. The Final Payment Certificate shall be computed as the total value of work executed under the contract less any previous payments and all amounts such as Advances, and cost of tools and equipment supplied by the Project Manager. The Supervising Officer must also ascertain that all out standing labour wages are settled and no other amounts are due to suppliers in the project area. These could include rental charges for site accommodation, food catering charges, charges for use of water sources, gravel sources and rental charges for equipment hired by the contractor.

5.3.4 Change request approvals

Two techniques of monitoring and controlling approvals for changes to work which might be a result of risks rising up as issues (*Zambia - Tembo and Blolhuis pg 18 – 20).*

- Site Instruction
- Variation orders

(a) Site instruction

In response to Site Requests, the Supervising Consultant issues Site Instructions providing the necessary information requested by the contractor. Site Instructions are used to amplify, correct or make minor amendments to the details of the work within Project Manager's delegated authority and to order the use of provisional items required to carry out the works as required. Contractor may be instructed to:

- remove improper work or materials,
- expose work which has been covered up without permission,
- re-execute unsatisfactory workmanship, and in general,
- carry out the requirement of the contract.

(b) Variation orders

Variation Orders are issued where extra works significantly affect the Contract Sum. These may involve omissions or additions to the Contract Sum. Variation Orders may be approved by the Project Manager within his authority as provided in the Conditions of Contract. However, most Variation Orders must be approved by the Client and accepted by the Contractor. The Contingency Sum or funds saved by rearrangement of bill items may cover the cost of Variation Orders, or extra funding may be requested from the Client.

5.3.5 Schedule simulation

On labour based works a schedule slippage impacts heavily on completion time of the project. It is therefore crucial to manage the project schedule carefully. In such cases the schedule simulation technique *(Appendix 3 – annex 4)* has been used to obtain an overview of the uncertainty and risk of meeting the due date. The baseline for all tracking is the work plans, key stage Gantt chart devised in phase three – prepare work plans, where responsibilities are clearly defined and accepted by the team members. The baseline could only be changed with Programme steering Committee. So as the work in progress is marked on the chart *(Appendix*

5C) by filling in the bars to show amount of work completed. If a key stage is late starting or takes longer than expected to complete, or the finish suffers delay, this is shown on the chart.

5.3.6 Cost simulation

As discussed in sub-section 5.3.4 above, contingency funds are allowed for in the cost to cover for extra works or changes in the work. Labour based works projects compromise hundreds of individual cost items which might be prone to uncertainty. A cost simulation *(Appendix 3 – annex 2)* had been one of the tools to indicate tentative expenditure of carrying out the activities. The cost simulation baseline is prepared in phase three – prepare work plans. During construction (phase five) the baseline costs are compared with actual activity costs *(Appendix 5C)* to note the impact of risks. Where deviations occurred, corrective actions could be taken.

5.3.7 Progress performance measurement

This tool / technique compares the planned (baseline) work to be done during a period and the actual work which has been achieved during that period *(See Appendix 5C).*

5.4 Summary

This chapter was intended to identify risks and risk responses, do risk analysis and identify the monitoring and controlling approaches of risks. It came to conclusion the main risk areas in labour based works are: project complexity, procurement management, financing of equipment for SMEs, financial management, labour wages, seasonal variations of labour, targeting methods, incentive schemes, maintenance of rehabilitated infrastructure, local participation, safe working environment and political will and commitment. Risk impacts, causes and responses have been discussed in this chapter.

Further analysis of the chapter has found that risk control and monitoring in labour based works involve:

- Drawing up a risk management plan as early as possible in the project life cycle
- Monitoring the progress against the risks
- Reassessing risks at regular intervals and at key milestones or stage gate

- Taking actions to overcome any divergence from the plan.

There had been little data available on which to base a risk analysis for quantification of the risks. This has been a general trend with labour based works *(McCord and Salter, 2009:25 & 29; Ninno, Subbarao and Milazzo, 2009:20).* On implications of delays in payment, for example, the work days the work delayed could at least be observed but the cost that accompanied it is not being mentioned. This omission from Public Works Programme (PWP) documentation and monitoring and evaluation analysis represents a critical weakness in terms of attempting to assess the cost effectiveness of PWPs, or effect comparisons between different PWPs and between PWPs and other forms of social protection problematic *(McCord and Salter, 2009:25).*

6 CHAPTER 6: REVIEW, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter reviews the research and summarises the research findings. Conclusions are drawn from the research along with recommendations for future research.

6.2 Review of the research

The literature review of this research focused on the management processes of labour based infrastructure programmes *(Majeres, AB 15, 2003:3; Devereux and Solomon, 2006:10)*. This study reviewed civil works programmes that generate social assets of good quality with cost effective production methods using labour-based technology. These are programmes which *McCutcheon (1995:120)*, argued that they should not be treated as 'make-work' – emergency, drought-relief, alternative-to-dole queue schemes but as proper engineering projects with forward planning which is part of other engineering work The literature indicates several management process approaches to these programmes. *Gaude (1987)* and IBRD proposed a three phased approach and *McCutcheon (1995)* had four phased approach. The phases are orientation, preparatory work, piloting and expansion of the programme into national programmes. At the same time challenges were also noted. These challenges included unlimited scope of the programmes, poor record keeping, inadequate planning, and lack of programme evaluations, slow in completion of projects. According to *Soares and Anderson (1997)*, one way of assuring improvement in process performance is process modelling and such modelled construction process can easily be automated *(Shirazi, 1996).* Against this background, the primary objective of this research was "*to assess the use of Process Protocol to analyse the key sequential phases and documentation for management of labour based works in order to form a common standardized approach"*. To achieve the primary objective through a series of research methods (see Chapter 3), the research:

- identified management processes of labour based works (chapter 4) using the Process Protocol as the assessment tool. The management process has seven phases which consider the whole life cycle of a labour based construction project, in particular, where roads are a major component. Several participants to the process have been identified and integrated into the activity zones. Three operational levels: national level, integrated local

level and project level have also been identified. The stage gate approach of the Process Protocol has been adopted. The management process has six process review points to pass through the stage gates and the seventh one, evaluates and reviews the previous documents and get them stored in the legacy archive.

- identified several risk factors (see chapter 5) which affect the management processes above. The findings indicate the following typical risk sources in labour based construction projects: project complexity, procurement management, financing of equipment for small and medium enterprises, financial management, labour wages, seasonal variations of labour, targeting methods, incentive schemes, maintenance of rehabilitated infrastructure, local participation, safe working environment and political will and commitment. Three major risk treatments which must receive maximum attention under the above risks are: decentralisation, use of private sector for contract works and piloting to enhance contracting capacity.

6.3 Summary of key findings

Below is an outline of the key findings of this research

6.3.1 The Management processes of labour based works

Chapter 4 assessed and analysed the management process of labour based works using the Process Protocol. It identified and considered the Process Protocol elements. The discussion, *inter alia*, focused on the steps, documents and procedures that are involved in the management of labour based works with reference to the Process Protocol. In chapter 4, it has been concluded that the management process has activity zones, phases, deliverables, phase reviews and legacy archive as the main elements for the framework approach which can be applied to labour based works.

6.3.1.1 Activity zones

The research has identified three operational levels: national level, integrated local level and project level of the Process Protocol activity zones.

(a)National level

Labour based works managed at national level have a national dimension generally reflected in the size of the budgets made available through public expenditure or financial assistance from

donors. For the success of the programme, an agency is identified at national level with a mandate to deal with social issues and coordinate the implementation of the programme. The size of the central organisation for national programmes is dependent on the magnitude of the programme. Table 6-1 summarises the responsibilities of central organisation in relation to integrated local level and Process Protocol activity zones.

Table 6-1: Summary of Central organisation responsibilities

	Parties Responsibilities	**Parties involved**	**Country Experience**	**Process Protocol Activity Zones**
National Level	Development planning and budgeting	Ministry of Finance and Economic Planning	Lesotho *(Pama 1992)* Uganda *(Otemo, pro 1999:68)* Malawi *(Pratt and Newton, 2005*)	Development Management
	Works planning and monitoring	Ministry of Works, Housing, Transport and Communication - Department of Rural Roads Ministry of Agriculture and Ghana Highways Authority - Department of Feeder Roads Ministry of Local Development Ministry of Rural Development	Lesotho *(Pama, AB 10, 2000:14)* Ghana *(Stock, 1996:8*) Uganda *(Otemo, pro 1999:68)*	-Project Management - Design Management - Change Management - Process Management
Integrated Local Level	Works supervision, construction and maintenance	Department of Works - Regional / Provincial Offices - District Offices - Local District Council - District Assembly	Ghana *(Stock, 1996:8*) Uganda *(Otemo, pro 1999:68)* Malawi *(Pratt and Newton, 2005*)	- Resource Management - Production Management - Facilites Management - Change Management - Process Management

(b) Integrated local level

In a decentralisation set up, integrated local level e.g. district councils or provincial offices takes charge of management of labour based works programmes. These programmes can be those programmes initiated at national level or piloting or small scale project funded by government budgets or when donors / government respond to emergency or crisis. Many developing countries are adopting decentralisation with an aim of broadening the base of rural development

efforts. Thus, encourages local initiative and more decision – making in the day-to-day operation of development projects closer to the people for whom development is meant. It is important that integrated local level should not only have sufficient technical know-how but it must also possess a financial management capacity, planning and monitoring capacity in order to choose works to be done, to organise the production process and to channel resources to the needy poor. Table 6-2 sums up the flow of activities at integrated local level in relation to Process Protocol activity zones.

Table 6-2: Summary of integrated local level responsibilities

	Parties Responsibilities	Parties involved	Process Protocol Activity Zones
Integrated Local Level	Development planning and budgeting	Directorate of Finance and Planning - Monitoring & Evaluation - Community Development	Development Management Process Management
	Works planning, monitoring, supervision, construction and maintenance	Directorate of Public Works	-Project Management - Design Management - Change Management - Process Management - Resource Management - Production Management - Facilities Management - Change Management

(c) Project level

The findings indicate that programme approach to management of labour based works has been adopted to ad hoc projects. Different kinds of programmes may require different institutional structures, and there is no such thing as an ideal organisation structure. The commonest institutional arrangement for labour based works for national programmes includes:

- *Programme Steering Committee (PSC)* is formed to provide overall policy guidance to the programme and to approve work plans and consider progress reports.
- *Technical Committee (PSC sub-committee)* is comprised of representatives of various institutions with relevant technical expertise in the issues of the programme. It is formed

to meet more regularly to make technical decisions and to report to the full meeting of the PSC.

- *Programme Management Unit (PMU)* is the entity or body established to manage the programme and as such plays a key role in the success of the programme. A number of options are available with respect to organisation structure for the programme management unit. Firstly, a line ministry / department take responsibility of implementation of the programme through normal activities as a project. Secondly, there is creation of one or more special project implementation agencies.

Whether for a national programme or small scale labour based works, at integrated local level the institutional arrangement for implementation of projects has District Executive Committee acting as the PSC and under it is the Technical subcommittee and the Programme Management Unit as discussed above. In addition, Area Development Committee and Village Development Committee are formed among the communities / beneficiaries to assist in planning, monitoring and implementation of the programme.

In cases of the national programme being managed at project level, the national level retains development management and integrated local level has facilities management of the Process Protocol activity zones. For small scale labour based works, the integrated level retains development management and facilities management. The following Process Protocol activity zones – project management, design management, change management, process management, resource management, production management becomes part of project level.

Planning and financing of labour based infrastructure programmes are retained by either national level or integrated local level for policy and to show government commitment. Government commitment is crucial because expanding labour based methods requires that the government make significant changes in institutions, attitudes, and work habits, and that the government provide a steady flow of funds. Thus, ideally, support for the use of labour based methods should be built among the most senior government officials

6.3.1.2 Phases and deliverables

Table 6-3 summarises the phases of management processes of labour based works in relation to the Process Protocol. The research has shown that not all phases of the Process Protocol are deemed to be necessary by the construction industry practices. Phase zero, phase one and phase two (see Table 6-3) at the national level are well known as Rural Accessibility Planning (IRAP) tool at integrated local level. The IRAP phase objectives, processes and deliverables are very similar in nature to the national level phases. The only difference is that IRAP tool involves communities and local organisation to identify access problems and to propose solutions for improvement of access to services and facilities.

Table 6-3: Summary of phases

Labour based works - Phases		**Original Process Protocol phases**
National level	**Integrated local level**	
Phase Zero : Demonstrating the Need	T1 – Poverty situation analysis T2 – Prioritisation and selection	Phase Zero : Demonstrating the Need
Phase one : Conception of need	T3 – Identification and formulation	Phase one : Conception of need
Phase two : Feasibility studies	T4 – Formulation of a project proposal	Phase two : Outline feasibility studies Phase three : Substantive feasibility study and financial authority
Phase three: Prepare work plans	Phase three: Prepare work plans	Phase Four: Substantive Feasibility Study and Outline Financial Authority Phase Five: Outline Conception Design Phase Six: Coordinated Design, Procurement and Full Financial Authority
Phase four : Developing production information	Phase four : Developing Production information	Phase seven : Production information
Phase five : Construction	Phase five : Construction	Phase five : Construction
Phase six : : Operation and maintenance	Phase six : : Operation and maintenance	Phase nine : Operation and maintenance

A brief summary of each of the phases in Table 6-3 is as follows:

- *Phase Zero: Demonstrating the Need* - This phase establishes and demonstrates the development needs and ensures problems are defined in detail. The objectives of the phase are:
    - identifying the key stakeholders and their requirements.
    - quantify the incidence of poverty in the country
    - identify means on how to address the poverty situation
    - indicate how the poor will participate in decision making and development
    - validate the need/opportunity and make recommendations

- *Phase one: Conception of need* – The initial statement of need becomes increasingly defined and developed into a structured brief. All the project stakeholders' needs are identified and their requirements captured. The purpose of this phase is to highlight logical linkages between intended inputs, planned activities and expected results. It entails selection and planning of optimum solution.

- *Phase two: Feasibility studies* - The feasibility study is a set of multidisciplinary works for defining and assessing a project so that the decision to carry it out can be taken. The optimal solution from phase one is thoroughly interrogated and where necessary amended to reflect the project's alignment with institutional policies, priorities, commitment and capacity, scope of the project, the expected stakeholders to be interacted with during implementation phase. The phase is aimed at:
    - Exploring all possible options for implementing the project
    - Achieving a clear understanding of the issues involved
    - Producing enough information to be able to rank the options
    - Obtaining a clear picture of the way forward**.**

- *Phase three: Prepare work plans* – work plans outline tasks that participants of the selected project / solution from phase two have an understanding of what is to be done. An integrated information system is developed to schedule work and allocate budgeted funds which are later used for control. The purpose of the work plan is to:
    - Define actions to be undertaken

- Identify times at which the actions are to be done
- Identify stakeholders to be involved
- Ascertain resource requirement for the actions to be implemented

- *Phase four: Developing production information* - This is commonly known as pilot phase of labour based works programmes. It describes the activities that are involved in gathering information which assist in production of works according to work plans from phase three. The objectives include:
    - To experiment with the use of labour based technology
    - Assess availability of labour
    - Establish methods of construction
    - Assess acceptability of the technology
    - To experiment and decide on payment of wages in kind or cash
    - Conduct socio-economic assessments

- *Phase five: Construction* - Construction provides the crucial mechanism that permits the progression from plan to action and change in those dimensions of the economic, social and physical actions that are the object of planning activity. The construction phase has three objectives to meet:
    - Monitor the construction progress
    - Measure and evaluate the progress to ensure the desired results are achieved.
    - Take actions to respond to deviations from plan

- *Phase six: Operation and maintenance* - Once project objectives are achieved, the project is dismantled and its remaining resources both human and physical are transferred to parent organization. The new administration (either at national level or integrated local level) need lessons learnt from experiences of the previous project team so that what is planned for the future is better than what went before. This phase is important as it links the implemented project to policy that formulated it, assesses impact of infrastructure and services provided by the project on the life of the communities and finally it identifies means of maintaining the assets created so that the assets can be sustained.

6.3.1.3 Phase reviews and legacy archive

The findings show that completion of any phase in the process required a decision-making process to be invoked. The work done is reviewed to determine the validity of allowing the programme to continue. The phase review meetings are attended by stakeholders and outcome / reports are prepared. Two types of gates i.e. soft and hard gates have been identified. Table 6-4 sums up the stage gates, gate status, reports and membership for each phase review meeting.

Table 6-4: Summary of phase review elements

Stage gate	location	Gate status	Outcome / report	Typical membership of phase reviews	
				National level	Integrated local level
Gate 1	Phase zero to phase one	Soft gate	Project concept (initial)	Ministry of Planning Ministry of Finance Ministry of Local Government Ministry of Community Development District Assemblies (Councils) The National Statistical Office Ministry of Natural Resources and Environment Donors Ministry of Transport and Public Works Roads Authority Trade Unions Employers Federation Enterprise Development Units NGOs	District Executive Committee (DEC) - Representatives of line ministries at district level -Heads of assembly departments -NGO's representative at district level -Donors Area Development Committees Area Executive Committee Village Development Committee NGO's representatives at community level Chiefs (community leaders) Council members
Gate 2	Phase one to phase two	Hard gate	Project Concept (full)		
Gate 3	Phase two to phase three	Hard gate	Project / Financing Proposal		
Gate 4	Phase three to phase four	Hard gate	Work plans		
Gate 5	Phase four to phase five	Soft gate	Project concept (final)		
Gate 6	Phase five to phase six	Hard gate	Final programme report		
	Phase six to legacy archive		Post project evaluation report Impact assessment report		

6.3.2 Risk and risk management in labour based works

The achievement of successful project and execution processes depends on the assessment and control of several risk factors which were identified in this research. The findings indicate the typical risk sources in labour based construction projects are: project complexity, procurement management, financing of equipment for small and medium enterprises, financial management,

labour wages, seasonal variations of labour, targeting methods, incentive schemes, maintenance of rehabilitated infrastructure, local participation, safe working environment and political will and commitment. The risks include:

- Inexperienced project team
- Delayed payment to small and medium enterprises and beneficiaries
- Labour wages set on ad hoc basis
- Scarce of labour at times
- Unclear procedures for targeting the poor
- Lack of continuity on maintenance of infrastructure and contractor's business
- Creation of infrastructure not needed by the communities
- Lowering of safety standards
- Resistance to adopt labour based works methods
- Collusion among contractors during tendering
- Insufficient fund to purchase tools and equipment

Three major risk responses / risk treatment which must receive maximum attention under the above risks are:

- decentralisation,
- use of private sector for contract works
- and piloting to enhance contracting capacity.

Some of the techniques and tools identified in this research to monitor and control risks are:

- progress meetings and progress reporting,
- progress performance measurement,
- cost simulation, schedule simulation,
- change request approvals,
- measurements & payments for small and medium enterprises
- and labour attendance register.

6.4 Conclusion

This thesis together with the supporting documents in the appendices provides essential evidence to suggest the achievement of the research objectives as well as the research output. It can be concluded that the primary objective of this research - "*to assess the use of Process Protocol to*

analyse the key sequential phases and documentation for management of labour based works in order to form a common standardized approach", is satisfied. The framework developed is very relevant to management of labour based works projects. As certain components could not be validated during the research, there are areas which need further investigations before the management process could be automated. These areas are proposed in recommendations below. It is, however, concluded that the framework is complete enough to be used as a basis for development and has the building blocks of consistent process for management of labour based works.

6.5 Recommendations for further work

This study has identified issues requiring further research in relation to the management processes of labour based works:

- The results of management processes of labour based works need to be validated by experts and field trials shall be required to iron out the irrelevance of some phase and deliverables as indicated in Table 6-3 above and Table 6-5 below

Table 6-5: Summary of phase deliverables not relevant to labour based works

	Design management	Production management	Facilities management	Health and safety, statutory and legal management
Phase one	Prepare design brief	Prepare design brief		
Phase two	- Prepare concept design brief - define key systems and criteria			- inform on statutory and regulatory issues - prepare CDM assessment
Phase three	Prepare outline concept designs - prepare full concept design - produce product model	Inform design process	-prepare full concept design - produce product model	Revise CDM assessment
Phase four	Finalise coordinated product model		Finalise coordinated product model	
Phase five	Develop operational product model		Develop operational product model	

- The assessment of impact of Roads Fund and Roads Authorities on management processes of labour based works.
- Further investigation should be made in the use of accessibility indicators for project prioritisation and selection in Integrated Rural Accessibility Planning (IRAP) tool Most of the projects which have resulted form use of IRAP tool has been on transport infrastructure related e.g. roads. IRAP is a planning process for improving access in rural areas designed for application at the local government level developed by ILO. IRAP simultaneously seeks to improve the rural transport system and distribution of facilities and services. The objective of the process is to - in a cost-effective manner - improve access to goods and services in rural areas. IRAP introduces a set of planning tools which are based on access needs of rural people and seek to maximize the use of local resources. Its main features are its simplicity, user friendliness, low-cost application and immediate outputs. Local planners can make use of the tools, as part of their routine planning activities, to define priorities for different sectors and communities. The process enables the planner to quickly assess what should be done where and identify rural infrastructure priorities.
- Investigations into type of skills to be included in training for beneficiaries of labour based works programme so that the beneficiaries become self reliant and are able to maintain the infrastructure after completion of the project.
- If the use of a framework approach to management of labour based works can enhance programme success in terms of efficiency, effectiveness and accountability.
- Investigate if decentralisation improves financial management procedures in labour based works in real terms.

Development of a better approach to building capacity in local government to effectively manage labour based works. Several developing countries have seen numerous labour based works programme management units lead by either international consultant or government department. The predominant objective being development of administrative, financial, planning and technical capacity of local government. Surprisingly, most local government especially in Africa cannot manage labour based works programmes without such projects. Capacity is still a problem.

7 Web Resources

International Labour Organization

ASIST Bulletins Nos 1 to 20 (1993 – 2006)

http://www.ilo.org/public/english/employment/recon/eiip/publ/bulletin.htm

Regional Seminar Proceedings (1992, 1993)

http://www.ilo.org/public/english/employment/recon/eiip/publ/regsem.htm

Tajgman D. and de Veen, J. (1998) Employment – Intensive Infrastructure Programmes: Labour Policies and Practices.

Bental, P., Beusch, A. and de Veen, J. (1999) Employment – Intensive Infrastructure Programmes: Capacity Building for Contracting in the Construction Sector.

Tembo, S. and Blokhuis, F. Manual for Supervision of Labour Based Road Rehabilitation Works

http://www.ilo.org/public/english/employment/recon/eiip/publ/reference/general.htm#private

Dinges, R. (1999) Integrated Rural Accessibility Planning – Malawi

http://www.ilo.org/public/english/employment/recon/eiip/publ/reference/general.htm#localplan

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http://www.ilo.org/public/english/employment/recon/eiip/countries/asia/lao.htm

Johannessen B., (1996) Strategy Documents for labour based road works Programme in Lao PDR.

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http://www.ruralworks.com/reports/reports.html

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http://www.imf.org/exernal/pubs/ft/scr/2003/cp0356.pdf

Malawi Poverty Reduction Strategy Paper
http://siteresources/worldbank.org

Employment Creation in Municipal services Delivery in Eastern Africa: Improving Living conditions and Providing Jobs for the Poor: Programme Implementation Final Report – 21 January 2004 to 30 June 2006.
http://www.ilo.org/public/english/employment/recon/eiip/countries/africa/tanzania.htm
Thwala D. W. Evaluation of Public Works Employment Creation Programmes in South Africa: thirty Years of Learning
http://www.ideas-int.org/documents/Document.cfm?doclD=114
BOND Guidance Notes No 4: Logical Framework Analysis (2003): Charity No 1068839, London.
http://www.bond.org.uk
Arbab (2008) Writing a successful Project Proposal
http://www.docstoc.com/docs/880175/Writing-Successful-Project-Proposalpdf/

Tearfund's **Project Cycle Management tools**:
http://tilz.tearfund.org/Publications/ROOTS/Project+cycle+management.htm

EuropeAid's **Project Cycle Management Handbook**:
http://www.stgm.org.tr/docs/1123450143PCM_Train_Handbook_EN-March2002.pdf [direct link to 3Mb PDF].

The Process Protocol
http://www.processprotocol.com

Klemetti, A. (2006) Risk Management in construction Project Network: Helsinki University of Technology, Finland.
http://www.tuta.hut.fi

8 Project Documents

(a)Government of Malawi / European Union Public Works Programme (EDF Project Account No 8.ACP.MAI.022) (http://www.pwp.co.mw)

- Schalk van der Merwe (Africon -Technical Assistant)
  - Final Report – 17 April 2001 to 31 July 2005.
  - Inception Report – October 2001
  - Project Description Document
  - Work Plan No 2a and 2b – 1 April 2002 to March 2003 prepared by *Adriaan Esterhuizen (Programme Manager – Africon)*
  - Biannual Report (No 4 July 2004 to December 2004)
  - Contract Administration and Site Supervision Management System Manual prepared by *Christo Beukes (Contract Manager – Africon)*
- Ministry of Local Government and Rural Development
  - Programme Steering Committee (PSC) Meeting Minutes held on 14 November 2002 at Cresta Hotel.

(b) Income Generating Public Works Programme (Malawi) – Financial Commitment No. 9.ACP.MAI.17

- Vincent Sikelo – the Task Manager (Roads)
  - Tender Dossier – Project Document for Road Rehabilitation works: Contract No 9.ACP.MAI.o17 / WORK / 01 / 2046: 2005
  - *Pratt J. and Newton J. (2007)* Mid-Term assessment of Phase I and Trigger Evaluation for Phase II of Income Generating Public Works Programme
  - *Pratt J. and Newton J. (2007*) Financing Proposal for Income Generating Public Works Programme
  - *COWI, (2007)* Income Generating Public Works Programme – Baseline Survey Report.
  - Phase 2 Programme Estimate 2: Application For Short Listing Of Contractors For Road Rehabilitation Works Of Selected District Roads In Malawi By Labour Intensive Construction Methods
- Ministry of Local Government and Rural Development (Malawi)
  - Income Generating Public Works Programme - Official Launch and Workshop Proceedings: Dated 19 & 20 January, 2006

- Income Generating Public Works Programme – Report on the 2009 IGPWP Implementation Review Workshop: 12th – 13th October, 2009.

(c) Road Maintenance and Rehabilitation Project (ROMARP) – IDA Credit 3239 MAI RFP No WB. 1968 – 616 / 03. (Malawi)

- Ministry of Local Government and Rural Development
  - A. Lwanda (Project Documents were prepared by I.T. Transport Ltd)

    Management Consultancy Services for Rural Accessibility and Mobility Activity (RAMPA): Improved Provision of Rural Transport Infrastructure and Development of Capacity for Local Road Construction and Maintenance Industry in Ntchisi District Assembly (2005)
    - Integrating IRAP Tool into District Planning Process (Appendix 1)
    - Accessibility Improvement (Appendix 2).

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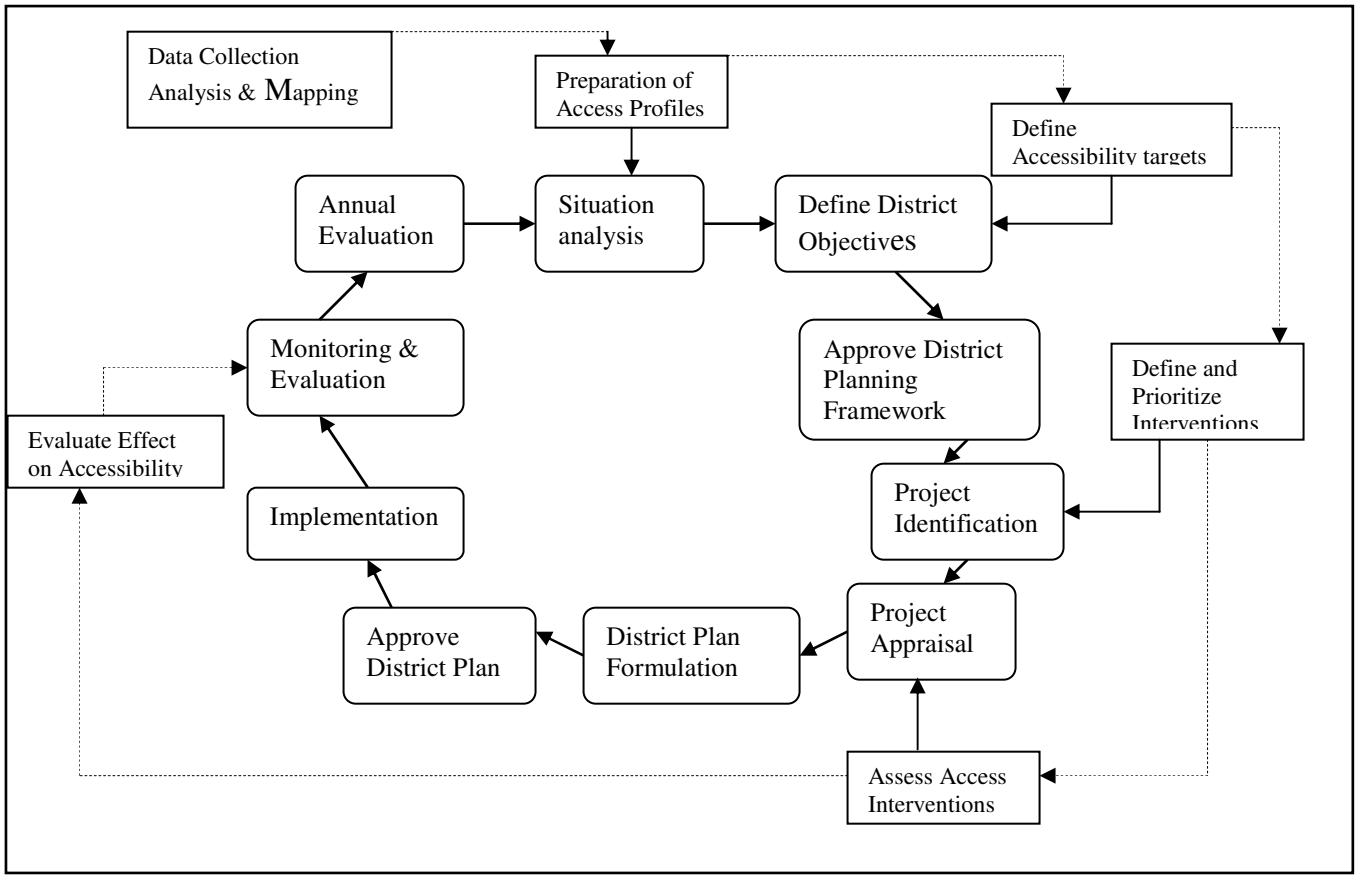
10 Appendices

10.1 Appendix 1

Generic Design and Construction Process Protocol (Kagioglou, Cooper, & Aouad pg 5 – 6)

10.2 Appendix 2

Integration of IRAP in the District Planning System



Source: Planning Guideline (RTI) – 2004:32

10.3 Appendix 3

Work plan activities, budget and schedule

Annex 1 – Work Plan 2a Activity Matrix

Activity Code	Activity Description	Target	Responsible	Objectively Verifiable Indicators	Assumptions
Activity Code 1 : Programme Management Unit.				**Activity Code 2: Road Works Component**	
Result 1.1	**PSC Liaison and Reporting**	2 PSC meeting and 3 special meetings with DDC members monthly, quarterly, bi-annual and annual reporting	PSC & PMU & DDC	Lump sum as average reimbursement of actual costs and not motivation to receive funds to meetings	Invitees willing to participate Constructive corporation and participation
1.1.1	Consumables for DDC members attending meetings				
1.1.2	Per diems daily				
Result 1.2	**Provide Effective Programme Management & Administration**				
1.2.1	**Provide sufficient qualified and experienced support personnel PMU**			Appointment records, staff contracts, employment conditions and labour law	Staff with suitable qualifications and experience Constructive visits, no exploitation
1.2.1.1	PMU support staff salaries	10 support and administrative staff	PMU		
1.2.1.2	Per diems daily				
1.2.2	**Provide sufficient qualified and experienced support personnel – Roads**				
1.2.2.1	Recruit and deploy technical supervisors	9 staff members	PMU	Design experience and exposure for local engineers	Engineers available for recruitment
1.2.2.1	Deploy engineers	2 staff members	PMU & NRA		
Result 2.2	**Review and implement site management guidelines**	Manuals for use in five district	PMU	Systems, manuals and experience of personnel can be used on future road projects	Availability of consultants
2.2.1	Review of documents and manuals providing guidelines for effective design and documentation, site management and administration for all road works contracts				
2.2.2	Purchase of support information		PMU	Financial records	Funds available
Result 2.3	**Design, contract documentation and tender procurement**				
2.3.1	Tender advertising for listed rehabilitation & bridge contracts	105 contracts, 86 rehabilitation & 19 bridge contracts	Engineers , NRA	Inviting tenders from local contractors	Local contracting capacity available

Source : GoM / EU Public Works Programme (Work Plan No 2)

Annex 2 – Work plan 2a Detailed Activity Budget

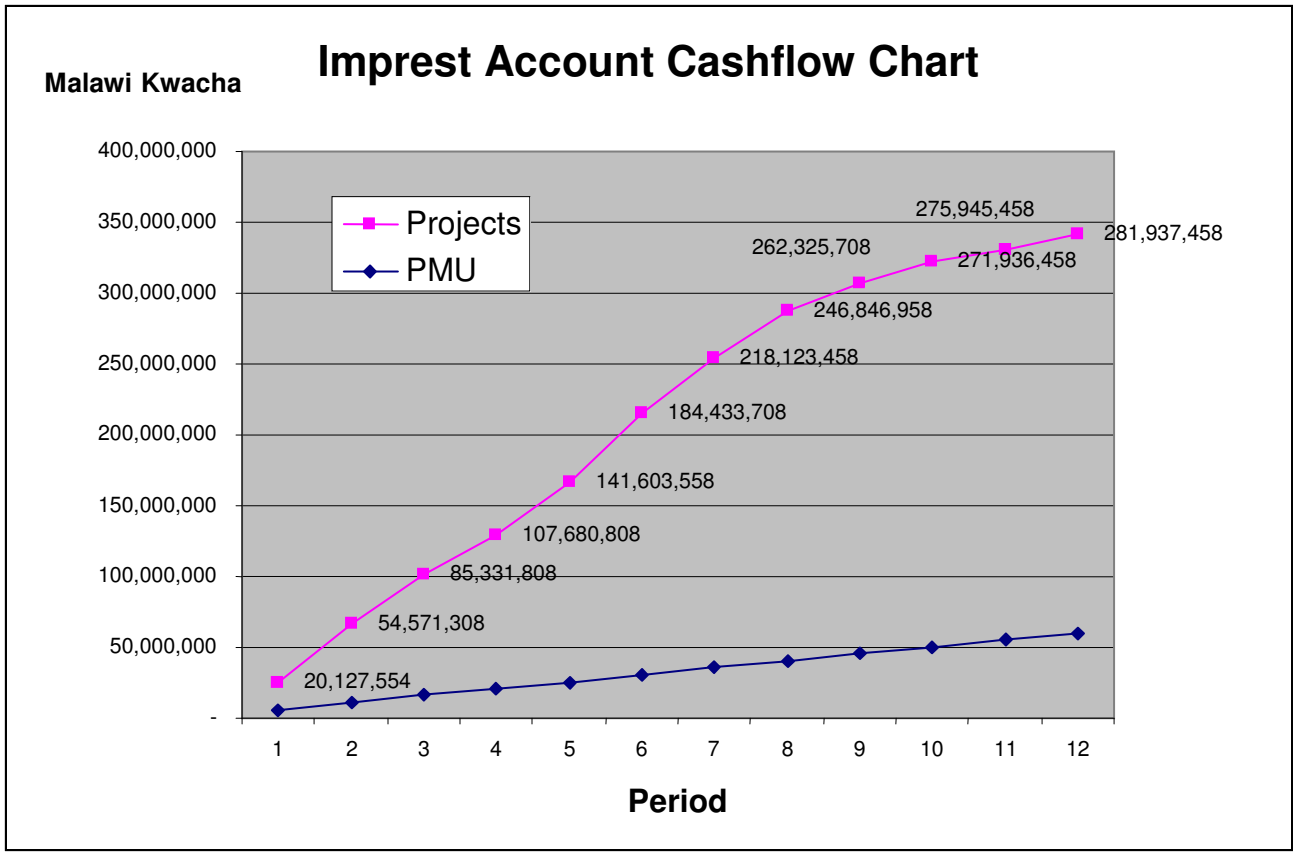
Activity Code	Activity Description	Unit	Quantity	Unit Price MWK	Item Cost MWK
Result 1.1	**PSC Liaison and Reporting**				
1.1.1	Consumables for DDC members attending meetings	sum	25	2,500	62,500
1.1.2	Per diems daily	sum	50	500	25,000
Result 1.2	**Provide Effective Programme Management & Administration**				
1.2.1	**Provide sufficient qualified and experienced support personnel PMU**				
1.2.1.1	PMU support staff salaries	Month	12	250,000	3,000,000
1.2.1.2	Per diems daily	Person days	75	324,000	3,888,000
1.2.2	**Provide sufficient qualified and experienced support personnel – Roads**				
1.2.2.1	Recruit and deploy technical supervisors	person	9	10,000	90,000
1.2.2.1	Deploy engineers	person	2	5500	11,000
Result 2.2	**Review and implement site management guidelines**				
2.2.1	Reviewing existing documents and manuals	Sum	1	50,000	50,000
2.2.2	Specialist consultant	sum	1	100,000	100,000
Result 2.3	**Design, contract documentation and tender procurement**				
2.3.1	Tender advertising for listed rehabilitation & bridge contracts	sum	1	400,000	400,000
Result 2.3	**Rehabilitation of existing earth roads by labour intensive construction**	km	850	215,000	182,793,000
Result 2.4	**Replacement of timber decks with concrete decks by labour intensive construction**	m	234	200,000	46,800,000
Total					

Source : GoM / EU Public Works Programme (Work Plan No 2)

Annex 3 – Work Plan Cash Flow Summary

		1	2	3	4	5	6	7	8	9	10	11	12
No	Comp.	Apr-02	May-02	Jun-02	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03
1.1	PMU	5,539,625	5,942,625	5,126,625	4,514,625	4,470,025	5,654,742	4,935,358	4,403,825	4,567,025	4,539,492	5,313,408	4,725,025
	Cum. Total	5,539,625	11,482,250	16,608,875	21,123,500	25,593,525	31,248,267	36,183,625	40,587,450	45,154,475	49,693,967	55,007,375	59,732,400
1.2	Roads	19,040,420	33,555,420	29,705,416	21,003,416	31,005,416	34,853,416	32,345,416	22,455,416	13,984,416	7,355,416	2,330,416	1,155,416
1.3	For.	486,167	432,667	555,917	754,917	612,667	7,622,067	867,667	4,297,417	1,133,667	446,167	430,167	2,925,667
1.4	Irrig.	600,967	455,667	499,167	590,667	2,304,667	354,667	476,667	1,970,667	360,667	1,809,167	1,248,417	1,910,917
	Total	20,127,554	34,443,754	30,760,500	22,349,000	33,922,750	42,830,150	33,689,750	28,723,500	15,478,750	9,610,750	4,009,000	5,992,000
	Cum. Total	20,127,554	54,571,308	85,331,808	107,680,808	141,603,558	184,433,708	218,123,458	246,846,958	262,325,708	271,936,458	275,945,458	281,937,458

Exchange Rate (2005 prices)
1EUR = 165 Malawi Kwacha



Source : GoM / EU Public Works Programme (Work Plan No 2)
Exchange Rate (2005 prices)
1EUR = 165 Malawi Kwacha

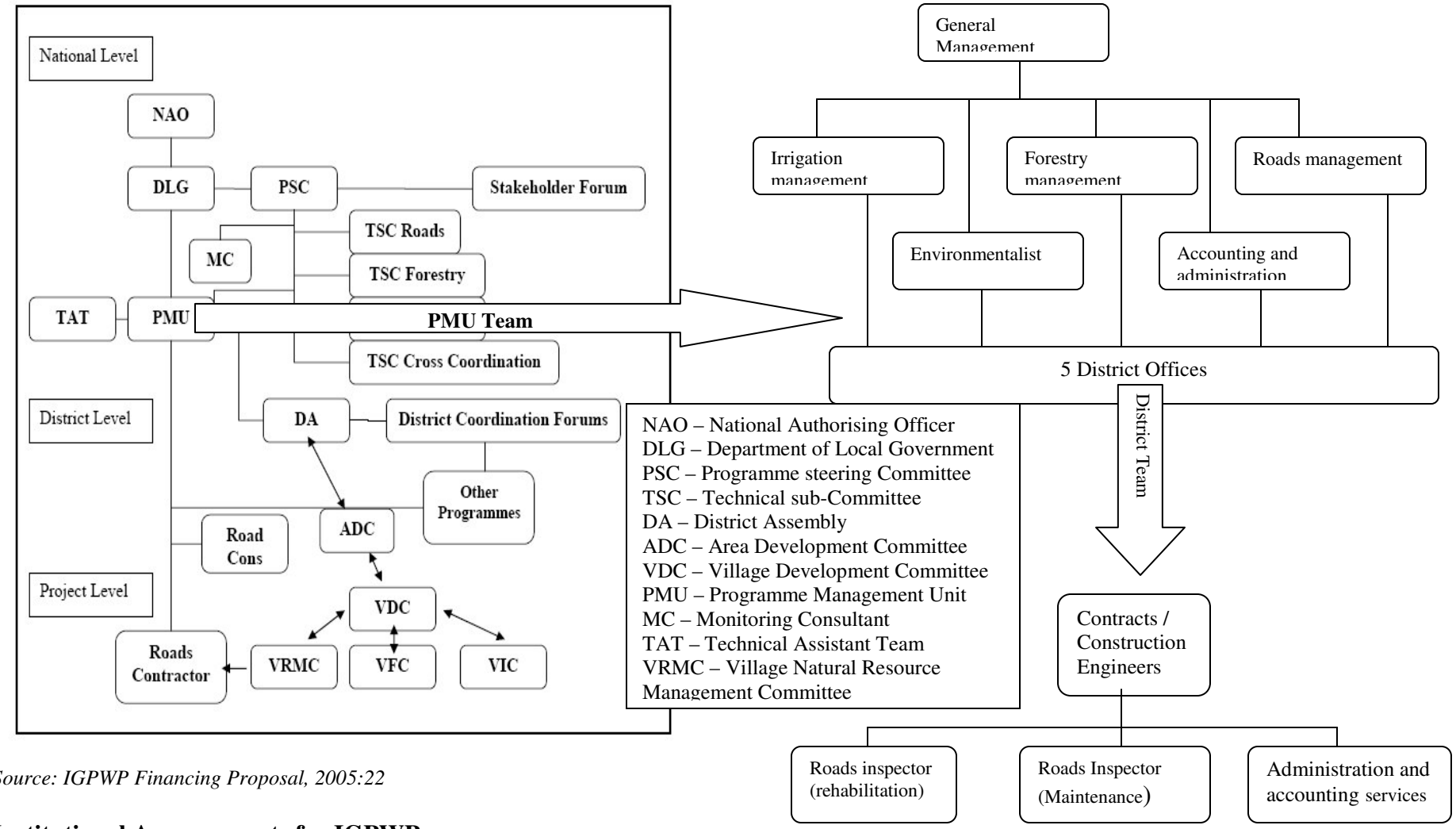
Annex 3 – Work Plan Cash Flow Chart

Activity Code	Activity Description	Apr-02	May-02	Jun-02	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03
Result 1.1	**PSC Liaison and Reporting**												
1.1.1	DDC members attending meetings												
1.1.2	Per diems daily												
Result 1.2	**Provide Effective Program Management & Administration**												
1.2.1	**Provide sufficient qualified and experienced support personnel PMU**												
1.2.1.1	PMU support staff salaries												
1.2.1.2	Per diems daily												
1.2.2	**Provide sufficient qualified and experienced support personnel – Roads**												
1.2.2.1	Recruit and deploy technical supervisors												
1.2.2.1	Deploy engineers												
Result 2.2	**Review and implement site management guidelines**												
2.2.1	Reviewing existing documents and manuals												
2.2.2	Specialist consultant												
Result 2.3	**Design, contract documentation and tender procurement**												
2.3.1	Tender advertising for listed rehabilitation & bridge contracts												
Result 2.3	**Rehabilitation of existing earth roads by labour intensive construction**												
Result 2.4	**Replacement of timber decks with concrete decks by labour intensive construction**												

Source : GoM / EU Public Works Programme (Work Plan No 2)

Annex 4 – Activity Schedule

Annex 5 – Organizational Chart



Source: IGPWP Financing Proposal, 2005:22

Institutional Arrangements for IGPWP

10.4 Appendix 4

Training needs assessment report for Care Malawi

Johannessen, (2000: 15 – 45) gives a sample of conducting training needs assessment.

Small-scale Contractors - In terms of the small-scale contractors for the road rehabilitation works, their work experience and formal training background needs to be identified through interviews with the contractor candidates and the staff they select. It is expected that the emerging contractors will have a limited background and experience with managing a large group of workers as well as carrying out rural road works. Furthermore, the project will be introducing the concept of contracting as a subject which will be new for all parties both the contractors as well as the staff in charge of managing the contracts.

The detailed content and extent of a training programme can therefore only be finalised once the final screening and selection of the contracting firms have been carried out. However, at this stage it is possible to identify the main topics which need to be included in a training programme. The training needs are not an isolated one-time exercise at the launch of the project. It needs to be continuously assessed during project implementation. The purpose of the initial training will be to get the physical works started. Thereafter, on-the-job training and additional refresher courses need to be arranged to cover areas where the various operators show weaknesses in their respective performance.

Petty Contractors - For the petty contractors intended for the routine maintenance works, it is proposed that training is carried out entirely through practical on-the-job training and detailed instruction provided by the maintenance inspectors.

Although this group may not require formal classroom training, this task should not be underestimated. It is important to bear in mind that this group will be recruited from the part of the rural population where the expected academic levels are among the lowest. This implies that the training delivered needs to be practically oriented and mainly be based on oral instructions and timely and regular follow-up of their work.

Maintenance Inspectors - Despite the fact that routine maintenance cover far simpler work activities than the rehabilitation works, it is important that the maintenance inspectors fully appreciate the functions of the various components of the road structure, and in particular the drainage system. Without this level of knowledge, it will be difficult to delegate the responsibility for the regular maintenance of the roads to this cadre of staff.

The maintenance inspectors would need proper training in road works technology, at the same level as the rehabilitation contractors. Equally, their exact training needs can only be determined after appropriate candidates have been identified. Some may have previous experience in labour-based road works technology, while others may be entirely new to this field and require a more comprehensive introduction.

Furthermore, the inspectors will also be in charge of activities such as the assessment of maintenance requirements, preparation of new contracts, supervision of works and issuance of payment certificates to the petty contractors. All these activities follow new procedures introduced through this project, and will therefore require specific training sessions.

District Road Supervisors - The district road supervisors already possess a proven track record in the field of labour based road works technology. It is expected that minor additions are required in this field. The main training requirements for this group is in the field of contracts management. Their past work experience has always been in a force account environment so they now need to be retrained in their new role as contracts managers.

District Administrative and Financial Staff - The district authorities need to be trained in their newly assumed role as the client of the road works. Most importantly, this implies that they need to be fully conversant in the obligations as stated in the conditions of contract, particularly in terms of timely payment of the contractors. In relation to financial management, they will need to possess the skills necessary to account for the funds, and ensure that there is a timely flow of funds to the district to meet the financial commitments taken on by awarding works to local contractors.

Project Engineers - Lastly but equally important, there is a considerable training demand among the project engineers, i.e. the technical coordinators and the field advisers. Although this group possesses the best academic qualifications, they are new to rural road works technology and the use of labour-based methods. In order for them to act as the resource base as planned and enabling them to provide the intended technical and managerial support, it is important that training is provided in the field of (i) labour-based road works technology and (ii) contracts management for such works.

10.5 Appendix 5A

Site Management Forms

Form CA 05

COMMUNICATION SCHEDULE

IGPWP MANAGEMENT SYSTEM

CONTRACT NO :

CONTRACT NAME :

Name and Address	Tel. No	Cell No	Fax No	Home No

Form CA 03 **VARIATION ORDER**

Contract No: ..... Contractor: .....

Description: .....

Variation Order No:.....

1 Reason for Variation: Additional Work ☐ Design Change ☐ Specification Change ☐ Omitted Work ☐

2 Requested by the .....

3 Description and motivation:

4 The rates are deemed to be fair and reasonable and no fruitless expenditure is involved.

5 This variation may / will not * affect the contract period (* Delete not applicable).

THE ABOVE WILL NECESSITATE THE FOLLOWING :

ITEM	DESCRIPTION	UNIT	QUANTITY	** RATE	AMOUNT
OMMISSIONS					
ESTIMATED TOTAL OMMISSIONS					
ADDITIONS					
ESTIMATED TOTAL ADDITIONS					
ESTIMATED ADDITIONAL EXPENDITURE					

This expenditure will be funded from :

Savings on scheduled work ☐ Contingencies allowed ☐ Additional funds requested ☐

Appended find a detailed contract expenditure motivating the above selection

Issued by :	Accepted by :	Checked by :
CONTRACTS ENGINEER Date :	CONTRACTOR Date :	CHIEF ENGINEER – REHAB. Date :
Recommended for approval by:	Approved by ::	
TASK MANAGER ROADS Date :	NATIONAL PROGRAMME COORDINATOR Date :	

Form SS03 **Income Generating Public Works Programme** **PROGRAMME MANAGEMENT UNIT**	SITE INSTRUCTION NO……
IGPWP PROJECT CODE:	CONTRACT NO:
CONTRACT DESCRIPTION:	
CONTRACTOR:	
REFERENCE/ITEM:	
DETAIL OF INSTRUCTION: …… …… …… …… …… …… …… …… …… …… …… …… ……	

ISSUED BY:	DATE:
IMPLICATIONS OF INSTRUCTION (Tick below with X) ☐ ADMEASURE ☐ EXTRA ☐ DAY WORKS ☐ SAFETY ☐ DESIGN/SPECIFICATION WORK/VO CHANGE	

RECEIVED BY:	DATE:
REMARKS:…….... …….……..…… …….	

DISTRIBUTION: (Enter names)

(In triplicate, issue one to Contractor, file one in Zone/District Office and send original to IGPWP Head Office)

Form SS04	**Income Generating** **Public Works Programme** **PROGRAMME MANAGEMENT UNIT**

DAILY SITE DIARY

CONTRACT NO:…… DISTRICT:……
CONTRACT NAME:……
CONTRACTORS NAME:……..

RAIN (Yes/No):…… RAIN HOURS:…… DATE: ……

VISITORS TO SITE:

Name	Organisation	Name	Organisation

WORK IN PROGRESS:

Description	Unit	Quantity	Description	Unit	Quantity

MATERIALS USED:

Description	Unit	Quantity	Description	Unit	Quantity

PERSONNEL/LABOUR FORCE ON-SITE (Insert Number):

Site Agent/Project Engineer	Foremen	Capitao	Bricklayer	Carpenter	Steel Fixer
General Labourers	Others				

SITE INSTRUCTIONS RECEIVED:

SI No.	Description

PLANT ON SITE:	DRAWINGS:
	Required by(date); Received:

INCIDENTS/ACCIDENTS/SAFETY:

Have reports been made (YES/NO):

BRIEF REPORT OF WORK AND PROGRESS AND ANY PROBLEMS, ETC.

GENERAL REMARKS

Site Agent/Foreman's Name:…….. Signature:……

Form SS05 **IGPWP SITE MANAGEMENT SYSTEM**	**SNAGS LIST FORM**
Contract No: ……	Contractor: ……

SNAGS NO	DATE	ITEM	EXTRA OR DEFECT (E/D)	ACTION BY WHOM		ACTION BY DATE	COMPLETION DATE	STATUS (A/F/C)
				CONTRACTOR	IGPWP PMU			

STATUS : A = Active F = Functional C = Completion

Form SS06 **IGPWP SITE MANAGEMENT SYSTEM**	**____- MONTH PROGRESS REPORT** **(Enter whether for MID / End Month)**

CONTRACT NO: ……..

DATE OF PROGRESS MEASUREMENT :

NAME OF CONTRACTOR: …….. IGPWP PROJECT CODE:

PHASE: ……

……

ITEM NO.	DESCRIPTION	BILLED QUANTITIES	PRODUCTION RATE PER WEEK	PROGRAMMED DURATION {days}		SCHEDULED PROGRESS [%]	ACTUAL PROGRESS [%]	PROGRESS STATUS (BEHIND, ON SCHEDULE, AHEAD) { days }	REMARKS
				ORIGINAL	REVISED				
OVERALL PERCENTAGE FOR CONTRACT									

SUMMARY AND COMMENTS:

CONTRACTS ENGINEER:……DATE:…….

R/SUPERVISOR……..DATE:……

Form SS07 **INCOME GENERATING PUBLIC WORKS PROGRAMME**
PROGRAMME MANAGEMENT UN IT

CONTRACT No : .....

CONTRACT DESCRIPTION: ……

PAYMENT CERTIFICATE No. ….		FROM …….. TO ……..		PAGE 1
CONTRACTOR :		STARTING DATE : CONTRACT PERIOD : COMPLETION DATE : REVISED COMPLETION DATE :		
			AWARDED	EST. FINAL
		SCHEDULED WORKS(Exl. Contingencies):	-	-
		CONTINGENCIES:	-	
BATCH:		APPROVED VO'S:		-
DISTRICT:		CONTRACT AMOUNT :	-	-
PE NO:		(+)OVER/(-)UNDER EXPENDITURE		-

SUMMARY OF PREVIOUS PAYMENT

No	Date	Amount	No	Date	Amount	No	Date	Amount
1			4			7		
2			5			8		
3			6			TOTAL		-

SUMMARY

PAGE	DESCRIPTION		AMOUNT
3	TOTAL AMOUNT FOR SCHEDULED WORKS		-
4	PLUS :	AUTHORISED EXTRA WORK (VO's)	-
-	PLUS :	ADVANCE PAYMENT	-
		SUBTOTAL	-
-	MINUS :	10 % RETENTION (MAX. MK…….)	-
		SUBTOTAL	-
-	PLUS :	RELEASE OF RETENTION	
		SUBTOTAL	-
-	MINUS :	REPAYMENT OF ADVANCE PAYMENT (Amount MK.....)	-
		SUBTOTAL	-
-	MINUS :	LIQUIDATED DAMAGES (MK……. Per Calendar Day for …….. Days)	
		SUBTOTAL	-
1	MINUS	PREVIOUS PAYMENT	-
	NETT AMOUNT PAYABLE THIS CERTIFICATE		-

AMOUNT IN WORDS :

WE HEREBY CERTIFY THAT THE ABOVEMENTIONED WORK HAS BEEN EXECUTED SATISFACTORILY AND
THAT THE QUANTITIES AND PRICES AS SHOWN IN THIS CERTIFICATE ARE CORRECT

…… ……

CONTRACTOR Date : ……	……. CONTRACTS ENGINEER Date : …… ……

FOR USE BY HEAD OFFICE		
CHECKED BY: …… CHIEF ENGINEER - ROAD REHABILITATION Date : ……	VERIFIED BY: …… … TASK MANAGER ROADS Date : ……	APPROVED BY: …… NATIONAL PROGRAMME COORDINATOR Date : ……
FOR USE OF THE ACCOUNTANT		IGPWP PROJECT CODE:

Form SS 08 **IGPWP SITE MANAGEMENT SYSTEM**			**RUNNING TOTALS QUANTITIES FORM**		
CONTRACT NO :					PAGE :
MONTH :					
SCHEDULE OF QUANTITIES ITEM NO.	TENDER QUANTITY	PREVIOUS MEASURED QUANTITY	MEASUREMENT OR CALC SHEET REFERENCE	INTERIM AGREED QUANTITY	CUMULATIVE QUANTITY

Form SS 10 **MID CONTRACT BUDGET AND CASH FLOW REVIEW : SUMMARY**

IGPWP SITE MANAGEMENT SYSTEM

CONTRACT NAME: …….

CONTRACT NO: …….

MONTH : ……. YEAR : ……..

IGPWP PROJECT CODE : ……..

NO	DESCRIPTION	CURRENT ESTIMATE	TENDERED AMOUNT	VARIATION + / -
1.	Scheduled amount (Appendix B – Revised Schedule of Quantities)			
2.	Contingencies			
3.	Net day works or additions/omissions resulting from re-measurements (details found in the latest payment certificate §)			
4.	Net additions/omissions on APPROVED EXTRA WORKS (details found in the latest contract minutes †)			
5.	Net additions/omissions on PENDING EXTRA WORKS (details found in Appendix A)			
6.	Value of approved claims (details found in the latest contract minutes †)			
7.	Value of potential claims (details found in Appendix B)			
8.	ESTIMATED COST OF CONTRACT (∑ 1,2,3,4,5,6,7,8)			

ESTIMATED OVER*/UNDER* EXPENDITURE

Remarks :

ROAD SUPERVISOR/ CONTRACTS ENGINEER

DATE

(Attach Appendices A and B)

Form SS 11 **IGPWP SITE MANAGEMENT SYSTEM**	**MONTHLY SITE REPORT**

CONTRACT No. :……. IGPWP PROJECT CODE ……..PE:…BATCH….

RS/CE:…… DATE: From (Monday) ……to …… (Friday/Saturday)……..

SITE INSTRUCTIONS ISSUED HAVING FINANCIAL IMPLICATIONS

SI No	SI Title/Description	FINANCIAL IMPLICATION	
		(MK) +	(MK) -

PAYMENT OF LOCAL WORK FORCE

REJECTED WORK / FAILURES, ETC.

OVERALL PROGRESS

EXTRA WORKS

GENERAL

ACCIDENTS/INCIDENTS ON SITE

Form SS 13 **Income Generating** **Public Works Programme** **Programme Management Unit**	**Transmittal Note**
IGPWP Project Code:	
TO:	
List of Drawings / Documents accompanying this transmittal Note	
Sent by:	**Date:**
TYPE OF ACTION REQUIRED(Tick below with X) ☐ Correction ☐ Filling Record purpose ☐ for issuing ☐ final as built drawing ☐ other	
Received by:	**Date**
Remarks	
File no:	
(in triplicate, issue one to recipient, file one in District Office and send original to IGPWP Head Office)	

Form CA 08 **IGPWP Site Management System**	**Contract Accident Report**

VEHICLE AND DRIVER DETAILS

Vehicle Registration no…….
Vehicle Description
……
……
Driver's Name……
Type of Driver Licence……..

ACCIDENT OCCURRENCE DETAILS

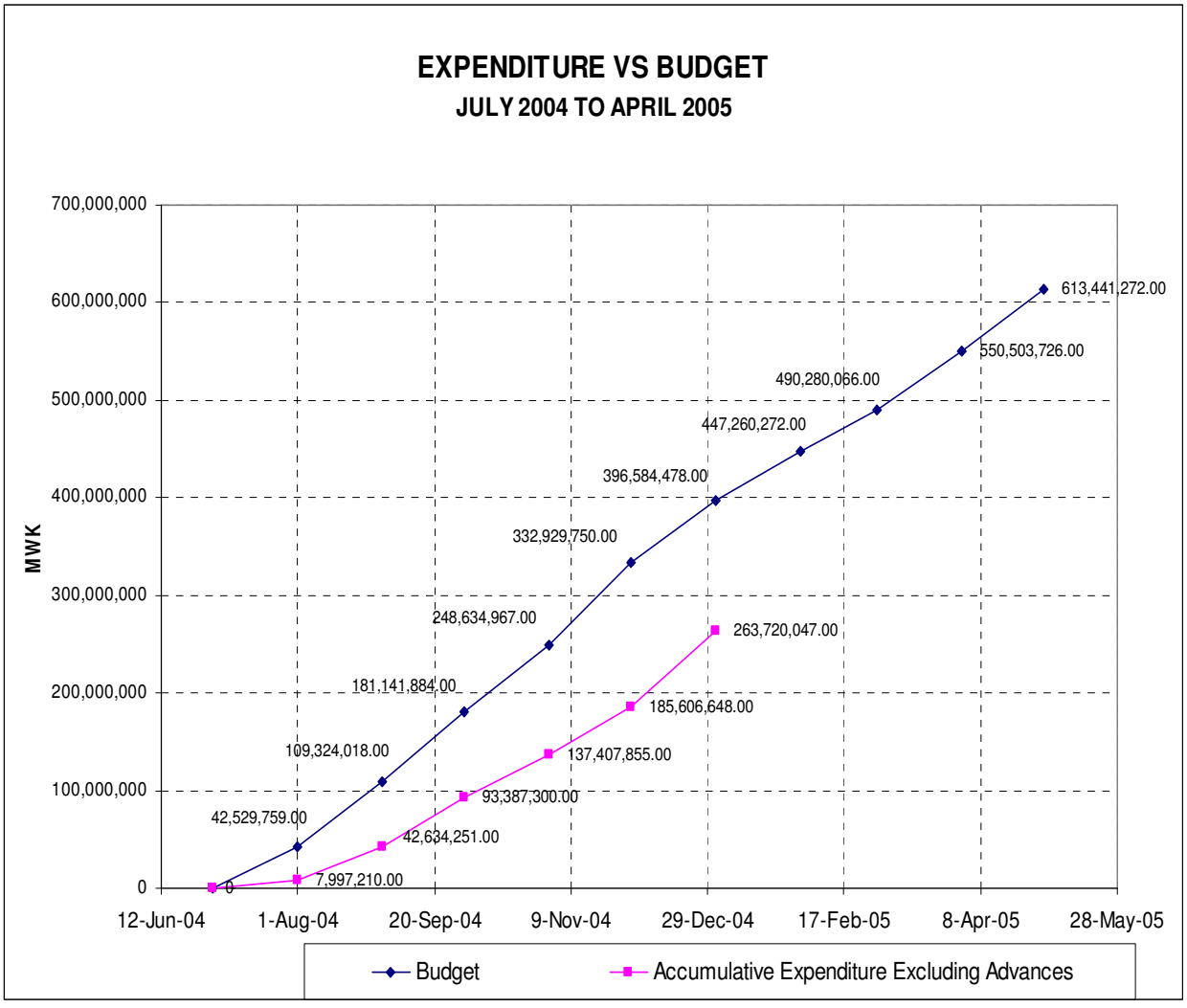
Date of Accident…….
Time of Accident……
Accident Locality……..
Weather Conditions……..
Road Surface conditions…….

DETAILS OF OTHER INVOLVED VEHICLES

	Vehicle A	Vehicle B	Vehicle C
Registration No			
Licence Disc. No			
Make and Model			
Conditions of tyres			

10.6 Appendix 5B:

Expenditure vs Budget for GoM / EU PWP



Exchange Rate (2005 prices)
1EUR = 165 Malawi Kwacha

10.7 Appendix 5C:

Planned Progress vs Actual Progress for GoM / EU PWP